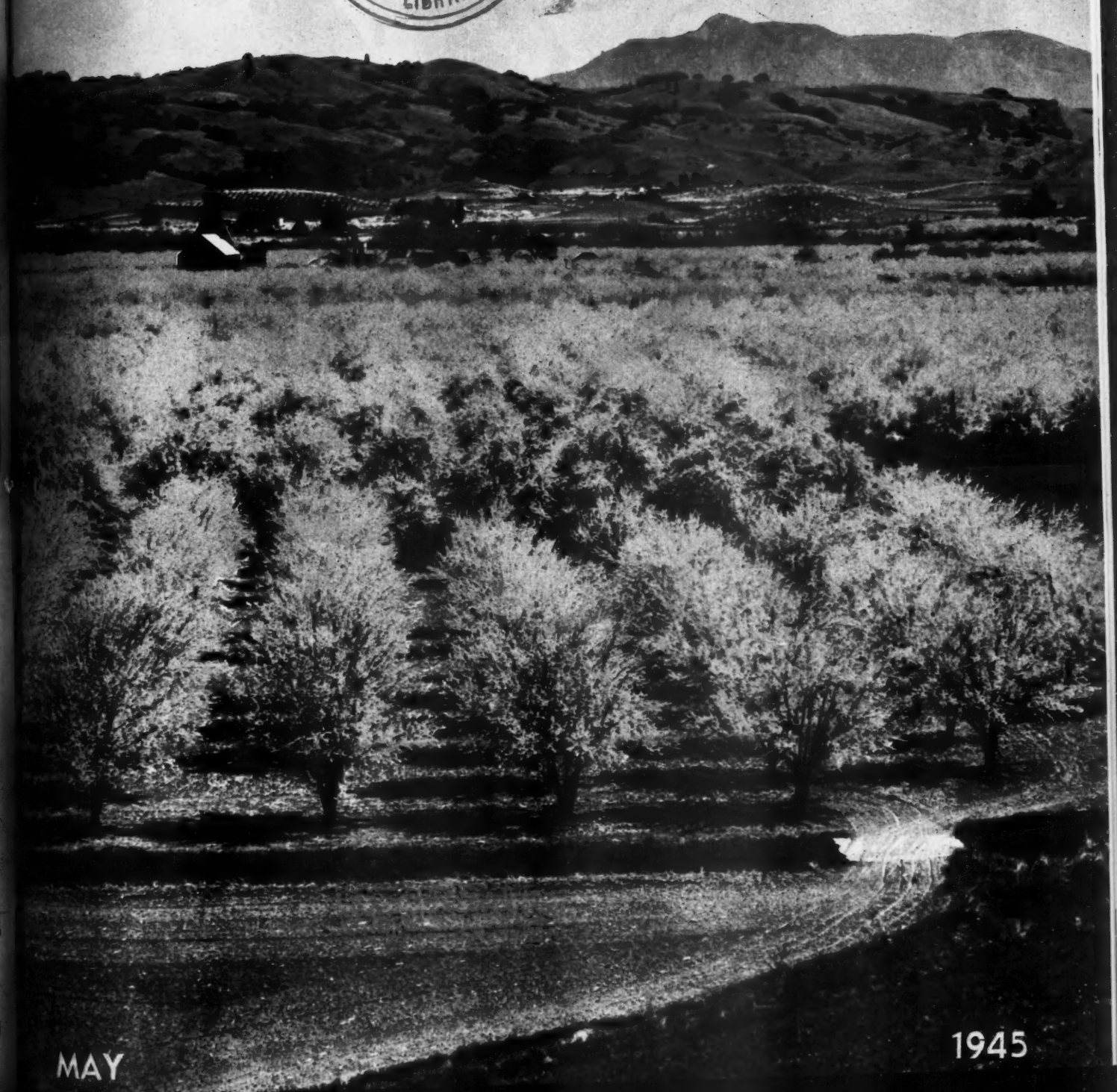
AMERICAN FRUIT GROWER



MAY 1945

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YESTERDAY'S PESTS WERE SISSIES!

No, it's not your imagination —the modern generation of many insects and fungi really are tougher than their ancestors.

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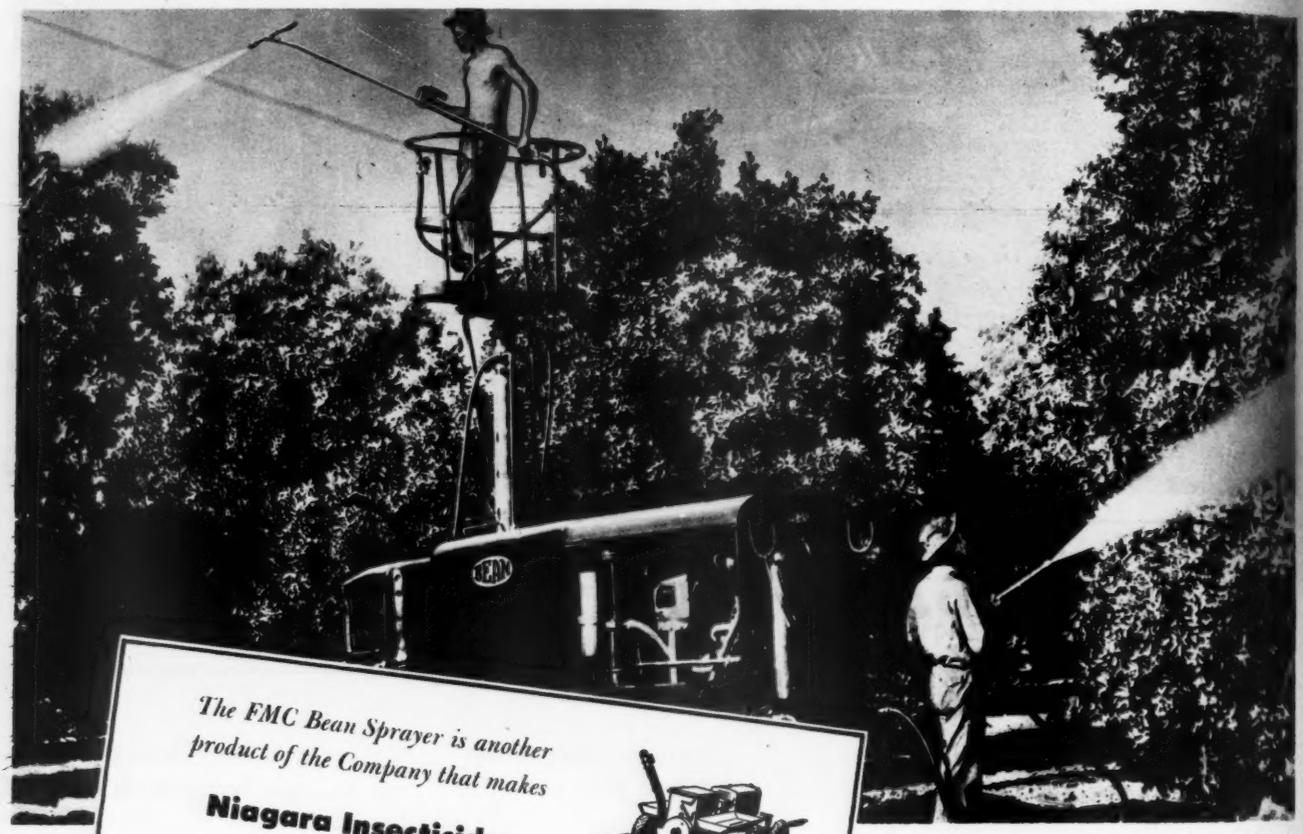

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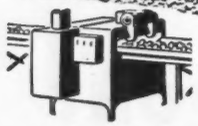

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Because serious losses can result from "too little—too late," the wise grower knows he must stay a step ahead of his orchard enemies at all times. In line with good battle strategy, he makes it a point to get his weapons early . . . depends only on the spray materials that have shown their worth "on the proving ground"—effectiveness established by field performance year after year.

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For scab control, the spray schedule specifies Orchard* Brand Apple Dritomic* Sulfur with the *sodium thiosulfate feature* that gives an "extra wallop." And the peach grower depends on the regular Dritomic* Sulfur which has long been his "old reliable" for brown rot and scab.

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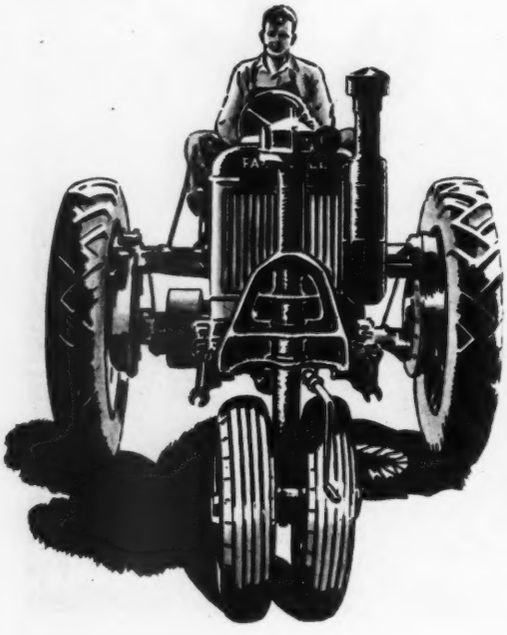
Our Thanks to

MRS. WINNIE MOORE

for the spirit and good will that prompted her to send us the following message:



Drawn from a photograph of Jacob V. Moore on the family's Farmall 20 tractor. Mrs. Moore says, "It is not a very good picture. We had a better snapshot but I misplaced it and never did find it."

INTERNATIONAL HARVESTER COMPANY
CHICAGO, ILLINOIS

Gentlemen:

I have read the statement by International Harvester about how business has been criticized by some people in this war. But I say this—what would our country have done without tools or machinery to farm or fight with? I am so thankful that the U. S. has companies like yours.

I am just a farm woman who knows what it is to do a hard day's work or get on a tractor seat and drive all day long, day after day. I do it to make a living, and I am so thankful we chose a Farmall, back in 1937. When we go out for a day's work I know we can depend on it, for it is always ready to go and never breaks down. I know our boys at the fighting fronts feel the same way about their equipment. If it has your trademark for accuracy and dependability, people can depend on it.

My husband, Jacob V. Moore, and our two children and I have farmed over 100 acres, and 25 of it in vegetables, and I don't know how we would have managed without our Farmall to prepare our land with. But we plan to buy more equipment to go with our tractor after the war.

AN INTERNATIONAL HARVESTER BOOSTER,
Mrs. Winnie Moore,
Bangor, Alabama, Rt. 1

THE MOST valuable thing International Harvester can have is the good will of the millions of farm families in this nation. Now, after three years of war—during which we have built war machines on government order and every possible farm machine we could build—it is good to know the view of the folks on the farms. They are interested in our problems, and we are interested in theirs.

Last fall we published a statement in which we said there were many false stories circulated about profits in wartime. The fact is that Harvester's profit, as an example, was 16% lower in 1944 than in the year before Pearl Harbor, although our sales were 75% higher.

We had many good letters in answer to that message. This month we would like to have you read the letter from Mrs. Winnie Moore, above, which she has given us permission to reprint.

Thank you, Mrs. Moore, for the fine spirit of your letter, for your appreciation of what Harvester is trying to do for Agriculture, and for your tribute to the good old Farmall.

We are all fighting this war together, in the factory and on the farm. America is proud of its farmers, and proud of the dealers who serve them in this emergency . . . Our best wishes to your family for early Victory and an easier time to come on the farm!

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue Chicago 1, Illinois

THIS SYMBOL MEANS:
"Product of International Harvester." Mrs. Moore says, "If it has your trademark for accuracy and dependability, people can depend on it." We want everyone to feel that way about the Farmall Tractor, International Truck, and every farm machine *made by International Harvester.*

BUY MORE WAR BONDS AND KEEP THEM

CUT AND SELL YOUR PULPWOOD AND SAWLOGS—FOR WAR

INTERNATIONAL HARVESTER

LETTERS TO THE EDITOR

Second Crop Called "Buttons"

Dear Editor:

I am a new fruit grower, only having been in the business the past six years, and have a lot to learn. As to the second crop of small peaches, I am wondering if this is a condition in only parts of the country and only happening once in a great while in other sections. (see pg. 5, Nov., '44 issue).

In my orchard this is a yearly occurrence on Halberta and Hale, but more especially on the Halberta. There is always a late crop of a few small peaches that are much sweeter and better flavored than the main crop. They also have perfect but extremely small seeds. I have never seen this second crop on any other varieties than the ones mentioned, and I have thirty varieties.

As to why this happens, I am sure I do not know, but believe it to be a peculiarity of the varieties.

Poplar Bluff, Mo. E. Singleton

Stanley Johnston, Superintendent of the South Haven Horticultural Experiment Station in Michigan says that the late-maturing, small peaches which are frequently found on self-sterile peach varieties, such as J. H. Hale and Halberta, have always been considered as a result of lack of pollination. Says Mr. Johnston, "These small peaches are commonly called 'buttons.' I have seen some that were edible, but usually, because of small size and poor shape they are worthless. Occasionally other peach varieties, normally considered self-fertile, will produce some 'buttons' following bad weather at blossoming time."—Editor.

An Editorial Hint

Gentlemen:

About three months ago I subscribed for the *American Fruit Grower*. Have received three issues and any one of the copies was worth more than the subscription price of the magazine.

I am a beginner in the business of fruit growing, having planted my first trees five years ago. Your magazine answers in each issue some question that has been puzzling the beginner.

Your March issue article on bridge grafting and the article on "How to Identify Disease Injury" are worth more than I can tell. Every beginner should have these articles.

Helena, Ark. K. B. Lasswell

We always like to know with what problems the grower is concerned and wish that more of our readers would write to us regarding their interests.—Ed.

Bagging The Quince

Dear Editor:

When I read your editorial, "What's Become of the Quince?" in the February issue, I decided I would relate to you my experience with quince culture.

I never had a single quince that was free from Oriental fruit moth. Last year I bagged 200 quinces when they were the size of a black walnut. I used 2lb. paper bags and tied them 1 to 1½ inches behind the stem. Last fall when I harvested these quinces everyone bagged was 100% free from fruit moth and perfect.

These were readily picked up by the trade at my roadside market at 15c apiece for the largest, 10c apiece for the medium-sized ones, and 5c for the smallest ones. The fruit that was not bagged was sold in 2 quart tills at 40c per till. These were not picked up by the trade until all the clean fruit was gone. I could have sold a lot more of this clean fruit. It was a pleasure to sell them, and a surprise to the trade to find clean quinces, which is unusual in this section.

It took me about 2½ hours to bag 200 fruits. I believe these 2½ hours were the best spent hours in my 20 years of fruit growing. I believe that if this method would be practiced where the Oriental fruit moth has made its home, the quince trade could be awakened from its slumber, and one could find again on the shelves of storehouses jars with the labels of Quince Honey, Jam and Jelly.

Fogelsville, Pa. Frank J. Mohr

Thanks, Grower Mohr, for relating to us your experience with quince culture. We hope that other quince growers will benefit from your suggestion.—Ed.

More on the Winter Banana

Dear Sir:

If Mr. S. W. Moore of Memphis, Tenn., should wish for some information on the Winter Banana apple other than its origin, as I presume he does, I volunteer to supplement as to habit of growth and bearing.

The quality of the fruit Mr. Moore is acquainted with, and as to its keeping, you will always eat them before they spoil, even though they keep well in storage until late February. The tree is a fast grower, of spreading, almost sprawling but symmetrical form and one of the earliest at bearing, coming into fruiting (in Northern Illinois) as early or even before the prolific Jonathan.

Omit no summer spraying, however, since even the insects and bacteria seem to recognize this apple's quality.

Roselle, Ill. Adolf Schneebeli

We add here another champion of the Winter Banana apple.—Ed.

Apple Concentrate

Gentlemen:

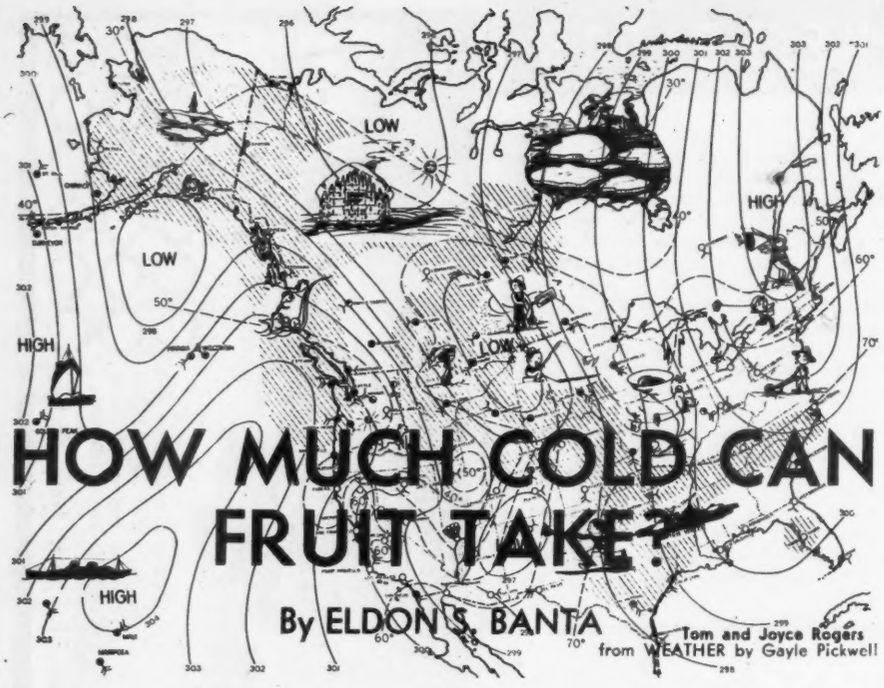
There is, I notice, a letter to the editor in the November issue regarding grape and apple concentrates. I have been working on the development phase of this process since 1916 when I was Research Associate in Horticultural Chemistry and Bacteriology at Purdue Experiment Station, Lafayette, Indiana.

My process is applicable to citrus, as well as to our northern fruits and many other products as well.

I remember President Stone of Purdue telling us that it takes twenty-five years to work out a real distinctive advance in an industry. I heard the secretary of the International Apple Growers' Association make the same statement in Worcester in 1944. The surprising thing is that my first contact with frozen foods was in 1920 and I have my process ready for commercial use in 1945. If it were not for restrictions due to the war we could make rapid use of apples as the processes are so distinctive that one can identify a variety in the concentrate rather more accurately than the average person can tell differences in flavors of fresh fruits.

Boston, Mass. Harry A. Noyes

New markets and uses for fruit are always welcomed by the fruit grower, and in this category falls the fruit juice concentrate. When the flavor is so distinctive that one can identify the apple variety, we'd say such a concentrate is a boon to the fruit industry.—Ed.



HOW MUCH COLD CAN FRUIT TAKE?

By ELDON S. BANTA

Tom and Joyce Rogers from WEATHER by Gayle Pickwell

THE early development of fruit buds alarmed northern fruit growers. As they walked through their orchards in late March they saw peaches, cherries, plums, pears and even apples coming into bloom in a record season. All fruits were practically 3 weeks ahead of schedule and the abundance of blossoms promised an early and plentiful harvest of fruit next fall.

But old man weather had something else in store for fruit growers. Weather forecasts of April 5 reported heavy snows in the north and midwest, and particularly in Minnesota, Nebraska and Iowa. Snow flurries were appearing in the Great Lakes region. The drama of roaring weather and fickle spring was getting under way, placing the fruit crop in a precarious situation. The thermometer became the most used instrument, with growers anxiously making observations. With cold weather on the way the question uppermost in the minds of growers was, "How much cold can fruit take?"

Peaches, one of the tenderest of hardy fruits, will survive a few degrees above zero at the silver-bud stage, from 10 to 15 degrees above zero at the green-bud stage, 20 to 30 degrees just before bloom, and from 25 to 28 degrees at full-bloom.

Apples will withstand low temperatures at various stages of bud development as follows:

Green-tip stage	0 to 10° F.
Delayed dormant stage	10 to 20° F.
Pre-pink	24 to 26° F.
Center bud pink	24 to 26° F.
Full-pink	24 to 26° F.
Center bud open	25 to 27° F.
All buds full-bloom	27 to 28° F.
Petals fallen	27 to 28° F.
Small green fruits	27 to 28° F.

One thing to bear in mind is that the more quickly the temperature drops, the more severe the injury. Likewise, the longer the duration of the cold period, the more damage will result. High winds along with a sudden or prolonged drop in temperature will also increase the hazards of bud, blossom or young fruit injury.

Not all losses from low temperatures are due to freezing or frosts. The set of fruit may be greatly reduced even if the temperatures do not go low enough for freezing. Bees and other pollinating insects do not fly freely at temperatures below 65 degrees, hence cross-pollination may be poor at low temperatures, thus decreasing set of fruit. If a flower becomes partially developed when a cold period strikes, the flower parts necessary for fertilization and fruit set may be inhibited from normal development. If the flowers reach full bloom and a sudden drop in temperature occurs during the period of pollination, pollen tube growth may be greatly inhibited, thus reducing fruit set.

The amount of injury due to freezing just previous to or during blossom period will have some bearing upon the amount of thinning necessary later. It may easily eliminate the need for any thinning whatever. The grower should examine his flower buds or flowers soon after the freeze for the amount of injury. The ovules in the central part of the pistil will show a brown discoloration a few hours after the freeze. This may be noticed by making a cross-section cut of the lower part of the flower. Many flowers thus injured will not set fruit. A few may set but will contain undeveloped seeds or no seeds at all. This phenomenon has been observed a number of times with peaches when injured by late freezes.

The 1945 season is different from any on record and as it unfolds it will be interesting to observe how the fruit crop was affected.

The following table gives the average temperatures and deviations from normal for the different sections of the nation for the week ending March 27:

Section of Country	*Average Temp.*	*Degrees above or below normal*
Atlantic Coast	56° F.	9.3° F.
Gulf States	67° F.	3.0° F.
Ohio Valley and Tennessee	57° F.	10.0° F.
Great Lakes Region	50° F.	16.0° F.
Upper Mississippi Valley Region	56° F.	14.3° F.
Missouri Valley Region	54° F.	15.2° F.
Rocky Mountain Region	45° F.	6.0° F.
Pacific Coast Region	51° F.	4.0° F.

It will be seen that exceptionally high temperatures, well above normal, existed over most parts of the country, the northern tier of states being almost as high as those to the south of them. This created exceptionally ideal conditions for very early bud development in the northern states where danger from late freezes and frosts is very likely. The extended warm period was not broken in most areas until the cold wave from the northwest on April 4 and 5. The Great Lakes then showed some tempering effect upon the drop in temperatures and less injury from freezing was recorded in orchards close to the Lakes. At this writing, losses were reported in Minnesota, Nebraska, Iowa and other states east of the Rocky Mountains on April 4 and 5. Heavy snows blanketed many parts of this area with light storms occurring in the vicinity of the Great Lakes on April 5.

Some growers no doubt contemplated the use of heaters or fires in their orchards to guard against frosts. Heating of orchards for frost prevention has never met with a great deal of success in the deciduous orchards of most areas. The practice is less effective during subfreezing periods than during frost periods. When used, a large number of small fires or heaters placed throughout the orchard is more effective than a few large ones. Their effectiveness will also vary with the velocity of air currents or winds, being obviously less effective during windy periods.

Growers will find some consolation in what happened to the fruit crop in other years similar to this one. The

(Continued on page 25)

Examining Flower for Frost Injury

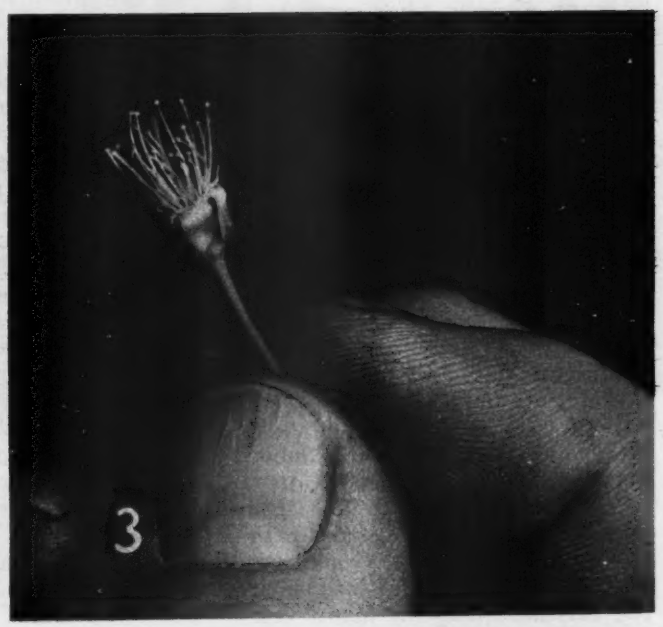
1 The wilting of the petals and discoloration of the blossom is not a true indication of frost injury. Figure 1 shows a cluster of cherry blossoms before minute examination begins.

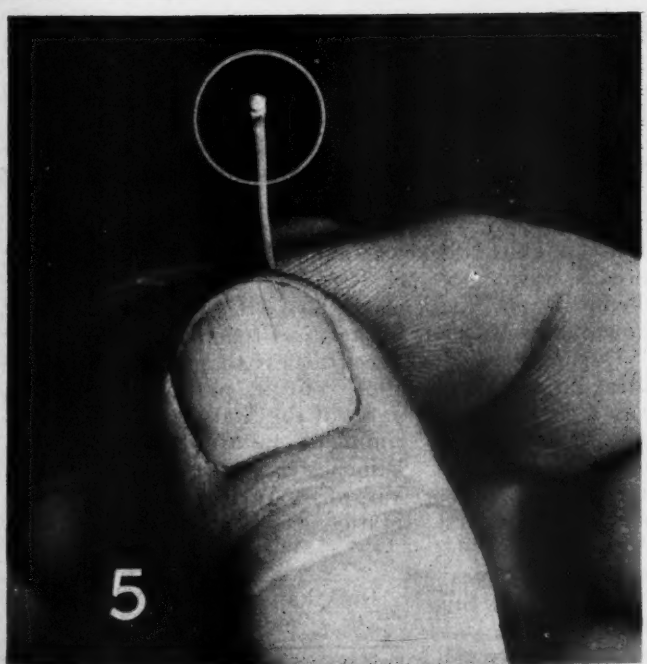
2 A complete blossom removed from the cluster.

3 To examine the inner parts of the flower for injury, remove the petals exposing the calyx-cup. Figure 3 shows the upper part of the pistil and stamens. The stamens may turn brown soon after injury.

4 The outer flower parts have been removed, showing the entire pistil. The enlarged portion at the base of the pistil (within the circle) is the ovary which later develops into the fruit.

5 The final step in examination is the cutting across of the ovary, showing a cross-section (within the circle.) This tiny center turns brown a few hours after severe frost if injury has occurred.





American Fruit Grower Photographs

STATE REPORTS ON EARLY BLOOM

New York

THE development of fruit trees to date (March 28, 1945) is further advanced than in any season during the past 10 years. McIntosh and other early apple varieties in the lower Hudson Valley had reached a full green tip on March 21. Similar and even more advanced stages of development were reported from western New York on March 28. The rate of development from now on will, of course, depend on weather conditions. The on-set of an extended period of cool weather would seem highly desirable.

In the spring of 1938, which was regarded as a relatively early season, the green-tip stage was recorded for McIntosh in the lower Hudson Valley area on March 25 but the trees in that section did not bloom until April 26. This rate of development could be much more rapid if favored by warm weather. For example, in 1941 only 16 days intervened between the green-tip and the opening of bloom on McIntosh in the lower Hudson Valley area. The 1941 dates for these two stages of development were April 10 and April 26 respectively—M. B. Hoffman, Professor of Pomology, N.Y., Extension Service.

Massachusetts

High temperatures in March have advanced vegetation approximately one month ahead of normal. Forsythia is in full bloom and some fruit varieties are in the pre-pink stage of development. At the Amherst Weather Station, the mean temperature for March was 44.4° F. compared with the normal mean for this month of 34.4° and a normal mean for April of 45.7°. In short, this is the earliest spring in many years. As this is written (April 3), colder weather is forecast, and it may be that vegetation will progress very little in the next week or so. We are likely to get temperatures in April low enough to cause injury to vegetation and fruit buds when they are in the present stage this early in the season. While a light frost would not now do great damage, temperatures in the low 20's might cause widespread injury.—Lawrence Southwick, Research Assistant, Massachusetts State College.

Indiana

At Lafayette, Indiana, the fruit bud development is further advanced than at any time in the last 25 years. Normally we apply a dormant application about April 8th. The earliest we have ever started a dormant spray was March 25 while on March 26th we had a few apple buds showing pink. The season with us is about 3 weeks ahead of normal. The season came along so fast that we were only partly covered up in apple scab when an all day rain began yesterday morning. (March 29). We went ahead dusting in the rain and hoped for the best.

You may also be interested in a quotation from a sectional report furnished by L. F. Steiner, Sr. Entomologist of the Bureau of Entomology and Plant Quarantine at Vincennes, Indiana. "On March 28th, pears and peaches are in full bloom. (Elberta peaches). Center blossoms on Duchess apples began opening today. Jonathan began showing pink March 26 and all winter varieties are expected to be in full pink by the week end and in bloom before the end of the first week in April, if present temperatures continue. Bud development is the most advanced ever recorded here. Some growers have already applied a delayed dormant and 2 complete scab sprays in March."—C. L. Burkholder, Asst. Chief in Horticulture, Indiana Agricultural Experiment Station.

Pennsylvania

First of all, we have had no frost in our soil this winter. Snow covered most of Pennsylvania while the ground was not frozen. Deep snow held out the frost the rest of the winter. Secondly, when the snow melted in early to mid-March, no cold weather followed. Thus the entire picture favored a warm condition. Central Pennsylvania has had a warm condition since the week of March 12, 1945. During the week of March 12 in Central Pennsylvania the temperature was ideal for dormant spraying (even dormant oil). In most years such a temperature never has come before the last 7 days of March and more often, the first week in April. We began our delayed dormant apple scab spray March 28th. In most years, this comes in mid to late April.

If warm weather keeps up, we will be in the pink spray with McIntosh, Stayman and Delicious by April 4th and thus get by without a pre-pink application.

I judge Central Pennsylvania fruit trees are 3 to 3½ weeks early as to bud opening. Napoleon cherry flowers began to open (the center flower) the afternoon of March 29 in our orchard. Most years this does not happen until from April 20th to May 1st.

From reports reaching State College I would judge that our condition here is just about the same in the fruit district of Southern and Southeastern Pennsylvania.—F. N. Fagan, Professor of Pomology, Pennsylvania Agricultural Experiment Station.

West Virginia

Peaches were in full bloom April 18-21 here last Spring (1944). This year they were in full bloom on March 29.

Hence peaches in the Appalachian area are approximately 3 weeks ahead of bloom schedule.

Bloom has moved at about this schedule northward through the belt from the Roanoke, Va., area. Blossoms seem plentiful for a crop, always barring catastrophe. Spring moisture and rainfall has been ample and weather ideal for pollination.—Carroll R. Miller, Secretary, National Peach Council.

Virginia

At this writing (March 30) the season of 1945 is three and a half weeks ahead of normal. The average date of height of bloom based on our records of the past 24 years for the Winchester area is April 28-29. Height of apple bloom this season is expected on April 2 and 3. Nearly all leading commercial varieties, excepting York Imperial, already have the center blossom open.

In the half century of history of apple growing in the Shenandoah Valley the only other season in which fruit trees bloomed so early was in 1921. The season of 1921 was the only season in which the fruit crop was almost completely destroyed by a "freeze-out." The normal commercial apple crop of 2,000,000 bushels in Frederick County was reduced to less than 10,000 bushels in 1921. Fruit production in other parts of the State was also almost a complete failure.—W. S. Hough, Winchester Research Laboratory, Virginia Agricultural Experiment Station.

Arkansas

In Arkansas this past winter there

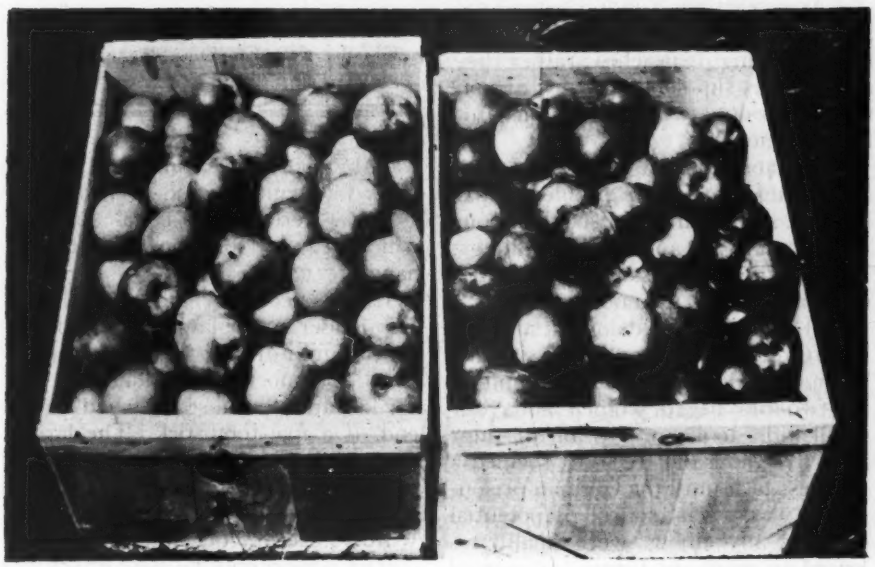
(Continued on page 28)

Extra fancy apples on a productive McIntosh tree whose nitrogen level is not too high.

Below, right—The tree producing the poorly colored McIntosh (left) yielded 30 bushels of them. The tree producing the highly colored ones (right) yielded 6 bushels. The difference in yield and color was brought about by 15 pounds of ammonium sulfate fertilizer.

BUSHELS VERSUS COLOR

By DAMON BOYNTON
Cornell University



McINTOSH apple growers know that their trees must be at rather high nitrogen levels in the spring and early summer in order to set good crops and lay down flower buds for the next year's bloom. They also know that fruit color and storage quality will be best and preharvest drop will be least if the trees are low in nitrogen at harvest time.

The growers' problem, then, is to strike a balance between highest production and best fruit color. How serious that problem is in a particular McIntosh orchard will depend on how often, over a period of years, weather conditions before and during the harvest time are unfavorable for color development in that orchard. In New York State, the problem is less serious for Champlain Valley McIntosh growers than it is for growers in the southern Hudson Valley, because in the Champlain Valley the weather is more apt to be cool and bright at harvest time than it is in the lower Hudson Valley. However, even in the Champlain Valley, there are seasons, like that of 1944, when the weather is poor for coloring, and high nitrogen trees produce a lot of green fruit even though they are well pruned.

An example of the relationships between these things in a western New York McIntosh orchard is given in Figure 1. In this orchard the trees received 2½, 5 or 7½ pounds of ammonium sulfate in April of 1942, 1943 and 1944. In all three years, fruit

(Continued on page 24)

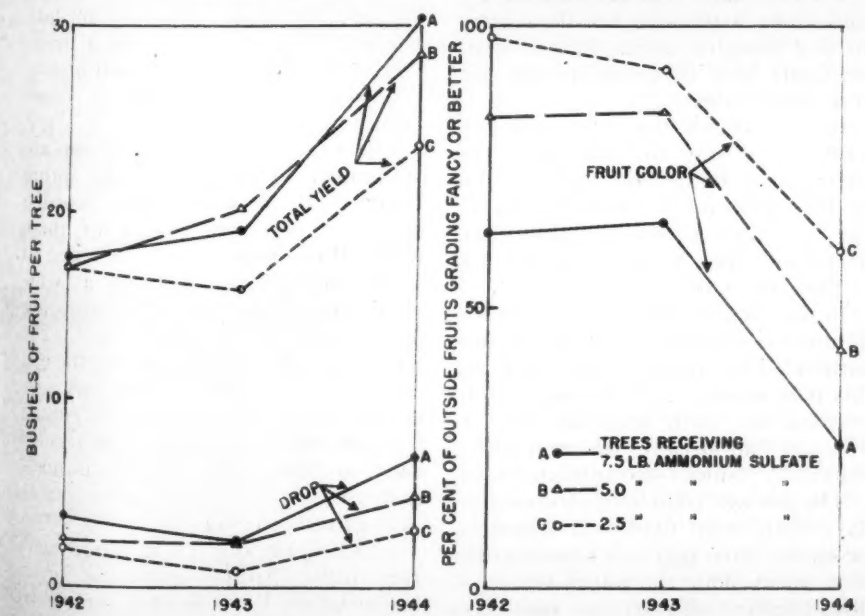


Figure 1.—This chart shows the relations between the amount of ammonium sulfate fertilization, yield, drop, and fruit color in a western New York McIntosh apple orchard.

Peach tree in almost full bloom at the beginning of the brush thinning operation.

HOSE AND BRUSH THINNING OF PEACHES

By L. W. MOORE
Burkeville, Virginia

Mr. Moore, formerly connected with the Department of Horticulture, Virginia Polytechnic Institute, and now a commercial grower in his own rights, gave the following observations on peach thinning before the Annual Meeting of the Virginia State Horticultural Society. — Editors.

The same peach tree as that pictured on the left after four minutes of brush thinning.

IT was four years ago that I entered the commercial fruit growing field and have since learned to truly appreciate the meaning of the words "orchard problems."

A few years ago I didn't believe too strongly in any short-cut methods to hand thinning of peaches; rather they appeared as slip-shod methods of getting a job done with little regard for thoroughness.

The labor shortage, upon which hinges many of our problems, has brought about a marked change in our way of thinking and of doing things. It has made it necessary to find short-cuts, and rapid methods of doing a job, if the job is to be done at all.

After combing the country-side for labor, I finally succeeded in rounding up two old negro women and four small kids, to begin the job of thinning five thousand trees. It seemed a hopeless task until the German prisoners of war, a vast source of potential labor at my elbow, were finally released to work on farms. It seemed that we had hit the jack-pot, until I witnessed their first day's labor. They are, by all odds, the slowest and most inefficient hands man was ever called upon to use.

It was evident from the beginning, that the old conventional method of thinning peaches had to be thrown overboard for some speedier method of removing the surplus fruits.

A heavy cushioned maul, which has been used in the state of Virginia before, was first tried. This was used to strike the main scaffold branches, and to strike them with such force that a third of the tree would be thinned with one blow. This proved to be too crude a method, resulting in an uneven distribution of the fruit, and rather rough on the tree.

A smaller jarring instrument, which could be used to strike the small branches, seemed to be the answer. This proved to be a fifteen inch length of old rubber spray hose. A large tree was thinned in five minutes with this hose. The fruits were as evenly spaced as they were on an equal size tree which required one hour to thin by hand.

It was necessary at first to use a step-ladder on the large trees with this short length of hose. To speed up the job the cumbersome ladder was discarded and the hose fastened to the end of a five-foot stick. The largest trees were thinned from the ground with the hose thus extended. It can be handled skillfully in this manner with a little practice.

The hose cannot be used effectively until about a week or ten days after the first drop has taken place, or until the fruits have developed to the size of a small walnut.

In our section the first drop was complete by May 13. The tip of the pit began to harden on May 29, and by June 2 the pit was fully hardened. We have then a period of about two weeks in which to complete the job of thinning with the hose.

Results will be disappointing if the thinning is delayed until after the pits harden. This proved costly for me this past season. The prisoners were released for farm work on June 1. The pits had already hardened which materially reduced size at maturity.

The job was completed in seventeen days with from fifteen to seventeen prisoners. Five aggressive hands could have easily done the job in ten days. Two hundred and fifty-six man days were expended at a total cost of $650.-00. The average cost was fourteen cents per tree. The prisoners averaged eighteen trees per day per man.

A true picture of the effectiveness of hose thinning is not shown in the graded fruit. Two factors are responsible for the low percentage of two-inch fruit. As before stated thinning was started too late for best results. Thinning was completed just four weeks before harvest. Rainfall was deficient at a critical time in the development of the fruit, however, late thinning must share the greater responsibility as will be shown later.

The fruit packed out thirty-two percent two inches and up, and 68 percent 1¾ inch min. The percent going under 1¾ inch was negligible.

Brush Thinning

I have here a brush thinning tool which was supposed to have been made to the exact dimensions of the brush exhibited at this meeting last year by Dr. Magness. An error was made in the dimensions somewhere along the line and this is the result. We are fortunate that this mistake was made for we have now a modification of the original brush-broom. We may well name this a brush "whisk broom."

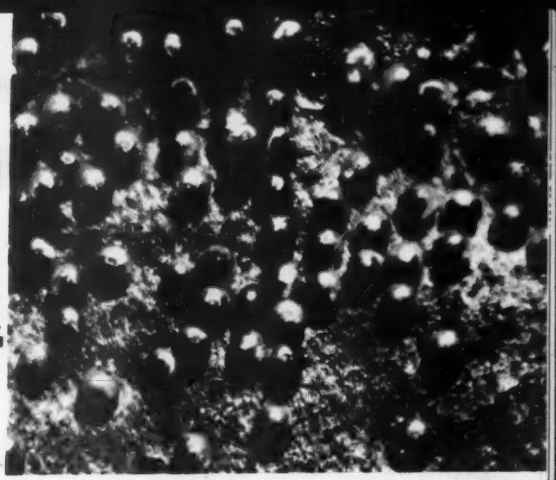
The wires in this whisk broom are of number 14 gauge steel bed spring fastened to a twelve-inch wooden handle. There are twelve of these wires, three inches long, fastened in a fan shape which is four inches wide at the end of the fan. The wires are held in place by a piece of ¾ x 2½ inch water pipe which fits over the end of the wooden handle. The wires are evenly spaced in the opposite end of the pipe which is flattened out to hold them in place. This brush was made and used by a neighbor grower with very effective results.

Much of the speed is sacrificed with this whisk broom over the brush broom at the expense of accuracy. Les

(Continued on page 26)

RED MITE REQUIRES SPECIFIC CONTROL

By L. H. WOODMAN



Red mite eggs highly magnified on bark.

AN insecticides salesman was visiting a successful western Michigan apple grower one hot afternoon last summer. The fruit grower had used a good dormant spray and followed through with the usual spring and early summer treatments. The weather had been hot and dry for several days and he was taking advantage of the lull in orchard activities to catch up on some odd jobs about the place, satisfied that his orchard was, for the moment, taking care of itself.

As the two men sat looking out over the orchard, the visitor noted that many of the leaves exhibited a curled, bronzed appearance. "Tom, I believe you have some red mite out there," he said.

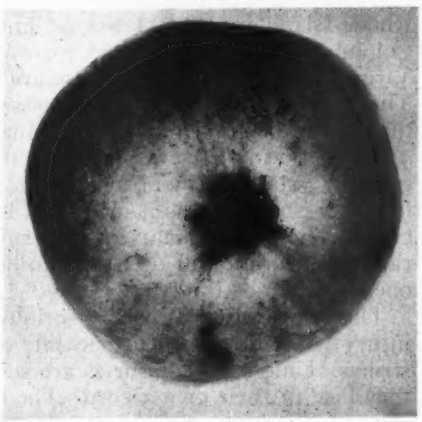
The orchard man scoffed at the idea. "That's just from the weather," he retorted. "Besides, I used a dormant oil. I don't have to worry about red mite."

"All right. Let's have a look," the friend challenged. "I'll just bet you a good cigar you do have red mite—dormant oil or no dormant oil."

The apple grower bought the cigars. He was astonished and no little concerned to discover that he had a red mite infestation averaging around a dozen mites to the leaf. Fortunately, however, the discovery had been made in time for him to take control measures before any severe damage could be done.

The incident is indicative of some of the reasons behind the rapid spread of red mite in many fruit growing areas throughout the country. This Michigan orchard man was no novice, but an experienced, conscientious and progressive operator. Yet red mite had caught him unaware in the same way it has caught hundreds of other fruit growers.

In the first place red mite is relatively new as a major enemy. Except in areas where infestation has already been severe, operators have not yet given it much thought or learned to be on their guard. In the second place,



Red mite eggs in calyx of apple at harvest.

the insect is so small it can hardly be seen with the naked eye and is therefore not readily detected until it has already gained a good foothold. Furthermore, hot, dry weather, promoting summer build-up of red mite, in itself has a drying effect upon foliage, hence no special significance may be attached to the characteristic bronzing of the leaves. Lastly, far too many fruit growers still have the mistaken idea that a good dormant spray gives season-long protection against the pest.

Experience during the last few seasons has proven that dormant sprays definitely do *not* insure lasting protection against red mite. Since the pest overwinters in the egg stage, dormant oil sprays do kill most of the eggs and thus reduce the mite population, and if favorable weather conditions prevail the following summer, mite infestation from the few eggs not killed by the dormant spray can easily build up to severely damaging proportions by midsummer unless further control measures are employed. A complete egg-kill by dormant sprays is, of course, next to impossible. The tiny, spider-like insect multiplies with startling rapidity, several generations often maturing during the growing season. It works on the under side of the leaf, feeding on the sap and thus retarding or completely destroying the activity of the foliage in supplying nutriment to the fruit.

Red mite eggs highly magnified on apple twig.

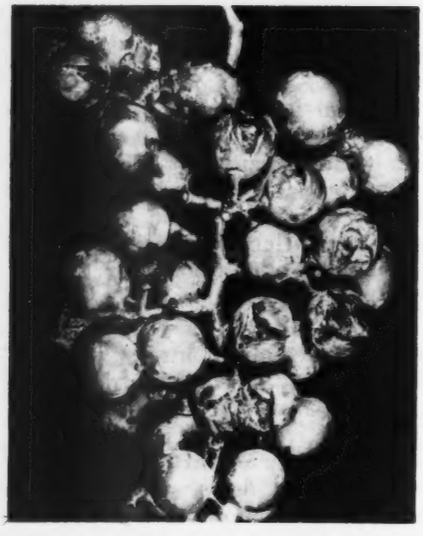
To control red mite effectively trees should be inspected at frequent intervals, beginning about two weeks after petal fall. Spraying or dusting should be started as soon as mites appear without waiting until leaves begin to bronze. To insure control a repeat application should be given 7 to 10 days after the initial treatment, and further applications later in the season if mites again appear.

Among a number of materials tested for red mite control, a preparation known at Dinitro-ortho-cyclohexyl-phenol has been found particularly effective. This compound may be used with or soon after non-caustic sulphur and lead arsenate, but should be applied when the temperature is not too extreme. It is important to note, however, that lime, lime sulphur, bordeaux or zinc lime should not be used in any spray containing this compound since they reduce the efficiency of the compound and are not needed as safeners for lead arsenate when this material is present.

During field tests recently conducted in commercial orchards summer applications of Dinitro-ortho-cyclo-hexyl-phenol kept the average mite population on treated trees down to less than one mite per leaf while on adjacent untreated trees the mite population ranged from 50 to 85 per leaf. The latter trees, receiving their regular summer treatment for codling moth, but without red mite control, lost 90% of their leaves. Such leaf loss almost inevitably results in small and poorly colored fruit. In another commercial orchard test this spray

(Continued on page 27)

MOTHER NATURE'S BLITZKRIEG



Above—Grapes damaged in July by hail and photographed after the cuts had healed. Below—Peach leaves and twigs struck by hail in June and photographed late in July. Below right—Apple tree injured in a hail storm.

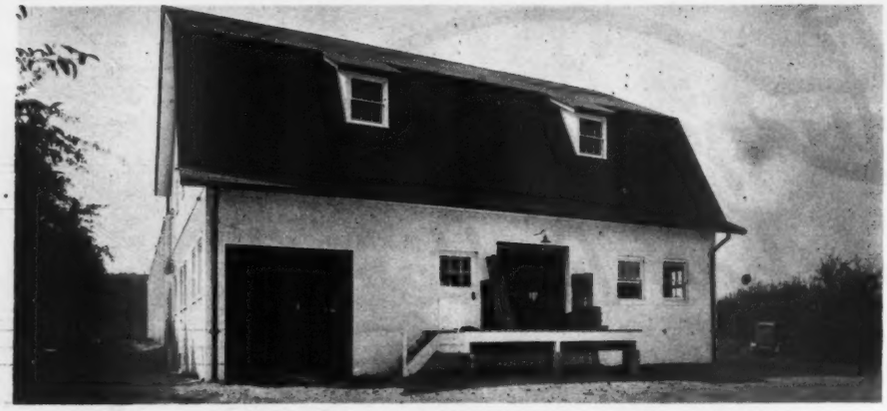
No one knows just when or where hail will strike, for no section of the country is immune. This year, as last year and every year, hail storms will destroy fruit crops. Science has helped solve many of the grower's problems, but when we talk about the weather, what little control the orchardist has over it! Insurance before hail strikes affords the grower protection, and spraying and thinning after hail can help salvage the crop.

HAIL storms in 1944 were severe in a great many localities. This statement is substantiated by the fact that insurance companies paid a Providence County, Rhode Island grower $11,265, a Clinton County, New York grower $26,884, a Columbia County, New York grower $14,888, and a Hancock County, West Virginia grower $18,390. These are only a few of the larger scattered losses. There were many more losses between these and surrounding locations, and there were literally hundreds of smaller claims.

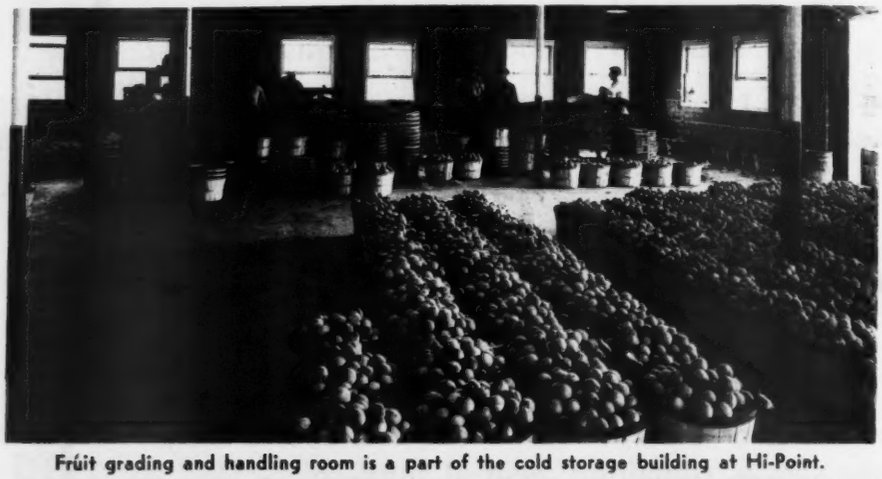
Again this year, several thousand fruit growers will face the problem of growing, harvesting and marketing fruit that has been damaged by hail, for hail may cause serious damage and loss in the orchard, as well as to the farm crops. The selling quality of the fruit will be injured by hail marks, and even rapid deterioration of the fruit can be caused when the pelting hail has broken open the skin of the fruit.

The fruit tree itself can be seriously damaged in a hail storm, although the injury will be confined to one side of the limb, the side from which the hail strikes. Unless these injuries are so severe that they cause the limb to break, they heal of their own accord. The healed scars somewhat resemble the work of the tree cricket or cicada.

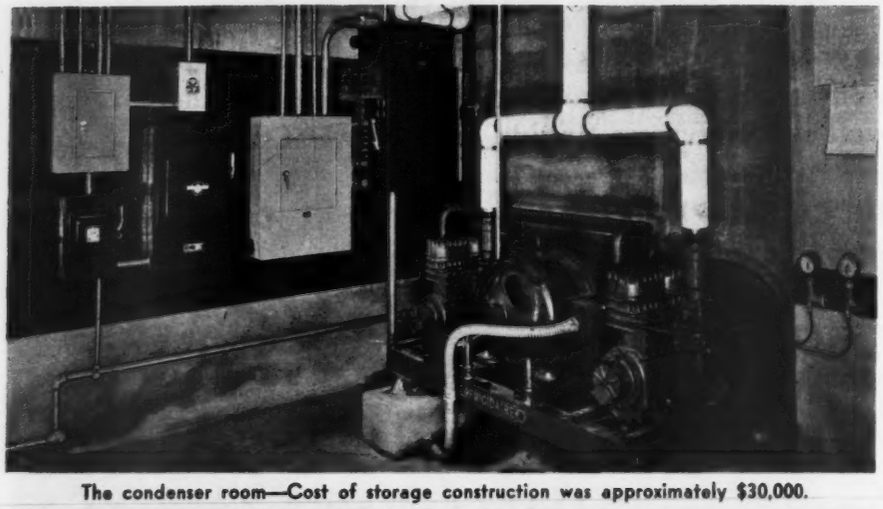
Hail might be called the result of weather's most tumultuous mood. Other than frost, no other element of the weather can so quickly destroy a crop of fruit. Occurring usually in a thunderstorm, hail falls more frequently in June than in any other month, and although the range of *(Continued on page 22)*



Exterior view of the E. F. Fisher refrigerated fruit storage at Romeo, Michigan.



Fruit grading and handling room is a part of the cold storage building at Hi-Point.



The condenser room—Cost of storage construction was approximately $30,000.

The storage proper shown during peach season. Its capacity is about 22,000 bushels.

AN IDEAL FRUIT STORAGE

ROMEO, Michigan in Macomb County, is the site of this refrigerated fruit storage on the Hi-Point Farms owned by E. F. Fisher and managed by Allen F. Rush. The pictorial story at the left was taken during the peach season.

The Hi-Point storage building is 52 feet wide and 145 feet long, having a grading room across the front 45 feet in depth. The storage proper is 100 feet by 52 feet which will store about 22,000 bushels arranged in piles of ten crates high and leaving ample space for alley ways.

In one corner of the grading room is a truck-well where a truck can be backed in with its platform on a level with the floor of the room. This makes it possible to load a larry and saves a great deal of hand labor. There is also a dock across the front of the grading room where three trucks can be loaded and unloaded at the same time. Above the grading room is a storage room for baskets and empty crates.

Two 10 ton compressors, operated by a 20 HP electric motor, cool the storage. Inside the storage, there is a large size Niagara Spray Cooler, Model 533, which takes care of both rooms. Excess humidity is taken out by a 10 KW concentrator in the corner of the grading room. The compressors are cooled by water pumped through a cooling tower and returned.

A basement measuring 20 feet by 22 feet is below one corner of the grading room and contains a furnace to heat the grading room, the compressors, switch board and water softener. The basement is situated at the end of the truck-well and has a coal chute so that coal can be dumped directly from the truck into the coalbin.

The cost of construction of this cold storage was approximately $30,000, which Manager Allen Rush says was not excessive when they consider that, aside from storage for 22,000 bushels, they have a fine large grading room and ample storage for crates and baskets.

More and more growers are discovering that modern cold storage is a way in which to control their markets. In heavy crop years, with markets glutted at harvest time, growers without an answer to the storage problem, often find their profits cut to nothing. Cold storage allows the grower to hold his crop until the time of price and demand is ripe.

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NATIONWIDE NEWS

Fermate for Cranberries

Cranberry growers in all areas where this crop suffers from field and storage rots are in line to benefit from spraying experiments conducted by pathologists of the U.S. Department of Agriculture's research administration.

The common spray for control of these rots has long been bordeaux mixture, a fungicide that has frequently been unsatisfactory. A new spray material that has shown up well in tests is fermate (short for ferric dimethyl dithiocarbonate). It has proved to be much better than bordeaux, especially on seriously infected bogs. Fermate promises to be useful in Massachusetts, New Jersey, and the Pacific Northwest. Wisconsin bogs have suffered little from these rots.

This new spray material is still available in only limited quantities, but the supplies are expected to be increased as conditions permit.

Aerosol Bombs

The aerosol bomb for use in the application of insecticides is a recent development by U. S. Department of Agriculture scientists. The "bomb," which is a small metal dispenser, releases the insecticides under pressure so that they become a fine fog or mist. In helping protect the armed forces against mosquitoes, more than 14 million of these "bombs" were distributed in combat areas in 1943 and 1944.

Farmers after the war may find these "bombs" an aid to ridding their homes and buildings of mosquitoes and flies. However, the "bombs" are not yet available to civilians.

Farm Motor Truck Rationing

Since the rationing of motor trucks started early in 1942, up to January 1, 1945, the ODT allocation section in Washington had approved 49,643 applications for farm vehicles upon County Farm Transportation committee recommendations. These farm applications approved represent 23.4 percent of all ODT approvals for new commercial vehicles. It is estimated that as a result of the county organizations cooperating with ODT district offices in reviewing certificates of necessity, a saving of more than 430 million truck miles and 39 million gallons of fuel were made.

Orange Juice Powder

Operations are expected to begin shortly at the new experimental plant of the National Research Corp. at Plymouth, Florida, to reduce orange juice to a powder from which fresh orange juice may be obtained merely by adding water. Developments at this pilot plant are being watched with great interest by citrus growers and government agencies, for it may be that this new product will answer many citrus problems of the future.

The process, when in production, operates to create a high vacuum at a low temperature which concentrates one gallon of juice into one pound of powdered orange-colored crystals without destroying heat-sensitive Vitamin "C" content. When hermetically sealed, this new product keeps indefinitely at normal temperature.

It is possible that far-distant parts of the world which today rarely consume citrus fruits can easily be reached by the industry with inexpensive shipments of citrus powders.

Peach Trees Vaccinated

A sulfa drug known as p-Aminobenzenesulfanilamide has been discovered to immunize young peach trees to the X-disease. This disease has spread rapidly since its discovery 11 years ago, until it now appears throughout the northern peach growing sections of the country, seriously reducing peach production. The disease first affects the leaves of the tree, causing them to become dry and brittle, and causing irregular patches of the leaf to fall out. The fruit ripens prematurely, if it does not fall, and has a bitter flavor.

When this sulfa drug is injected into young peach trees, control as high as 100% is possible, as shown by experimental results.

Bees As Plane Cargo

Italian queen bees and pest-destroying insects are being air-expressed regularly for emergency reasons these days. The Stover Apiaries of Mayhew, Mississippi, have become regular shippers of the queen bees to the American tropics. The Stovers pack one queen and ten workers in a small wooden case with travel rations of sugared water.

As for the insects, one airline is carrying them to 18 different countries. Department of Agriculture entomologists recently sent 2,000 parasitized codling moths to their colleagues at Lima, Peru. California insectaries ship between 40 and 50 million insects by plane each year.

Farm Buildings Tagged

Farmers, who normally spend more than $90,000,000 a year for ready-made barns and other structures built principally of wood, will find this spring that most of these buildings on sale are now tagged with their ceiling prices.

The tagging requirement and specific rules for pricing these products were recently put into effect by the Office of Price Administration to provide more effective control of farm-building costs. These costs will be especially important to farmers after the war when it is expected they will spend considerably more than usual each year for several years in order to make improvements postponed during the war.

A structure may be sold for less than its ceiling price, but not for more. Buyers and sellers share a legal responsibility not to charge or pay more than the ceiling price marked on the tag required by OPA.

Fruit By-Products

Two vital products are now supplied by cranberry pulp waste—ursolic acid and Vitamin A. Ursolic acid is a rare emulsifying agent which helps mix water and oil.

The presence of ursolic acid was discovered accidentally by scientists in a Massachusetts canning plant, when they were trying to separate cranberry pigments from the fruit. A high yield of vitamin A was shown by further tests on the seeds.

Higher Container Costs

Eastern wooden package producers have been allowed by the Office of Price Administration to apply for price increases on a showing of financial hardship as provided by Amendment 3 to RMPR 320.

This action may mean higher prices for packages, but higher prices will be better than no containers. Sellers who are unable to continue production of wooden packages because of increased costs will be taken care of by this action.

Lumber for Farm Repairs

For the second quarter of 1945 the WFA has allotted an additional 22,000,000 board feet of lumber for use by farmers in emergency maintenance and repair of farm dwellings. The WFA assigns preference ratings to farmers for this lumber and for other farm construction lumber by delegation of authority from the War Production Board. Application for preference ratings is made to the County Agricultural Conservation Committees.

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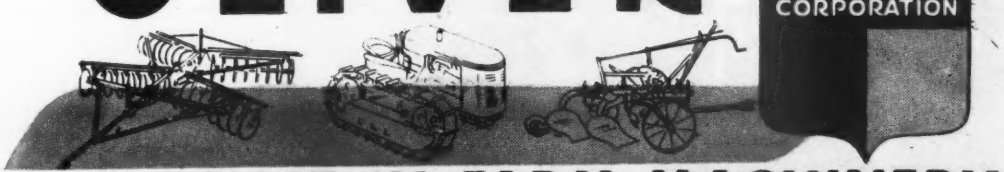

THE FINEST IN FARM MACHINERY

STATE NEWS

CONNECTICUT—Because of the labor shortage, cold weather and heavy snow in January and February, many Connecticut fruit growers were not able to do the usual amount of apple tree pruning. The season as of April first was three weeks ahead of normal. The tractor brush pushers proved to be a great help both as a labor saving device and as a means of moving the pruning brush out of the orchard quickly so that the delayed dormant spray could be applied on time.

Most apple orchards needed an oil spray this year for the control of San Jose Scale and European Red Mite. The unseasonably warm weather in late March forced the fruit buds so rapidly that it was impossible for growers with large acreages to complete the spray before the apple trees were in a pre-pink bud stage. In some parts of the state apples were in a pre-pink bud stage by April first, which was almost four weeks ahead of the 1944 season.

The apple market, even for the best grades of apples, was slow during March.

Many growers, concerned about labor for apple thinning, are interested in a more extensive use of a toxic spray for blossom thinning.

The fruit container situation appears to be even more critical than it was in 1944. Apple growers are purchasing used containers to supply at least a part of their needs for the 1945 crop.—H. A. Rollins, *Extension Fruit Specialist, Storrs.*

MONTANA—The 1944 apple crop has been entirely cleaned up, none on hand in storage.

Weather conditions at present are favorable and indications are very favorable at present for a good apple crop this year. In the sweet cherry district, present conditions indicate a very heavy crop for 1945.

Many changes in methods for handling will be made this season. The package situation is causing some worry at present. This, however, may work out.—George L. Knight, *Sec'y, Missoula.*

NEBRASKA—Fruit prospects at the moment look very good in Nebraska. Peaches, apricots, plums, and cherries planted since the 1940 freeze show better than an average crop for trees of this age. The old Jonathan trees, even though they had a good crop last year, are budded well enough for a fair crop this year.

The interest in fruit growing is on the rebound. Were it not for the exceedingly high prices for nursery stock, we probably would have quite a lot of orchard acreage set out this year and next year.—E. H. Hoppert, *Sec'y, Lincoln.*

MAINE—Damage to young orchard trees by deer, and to a less extent by moose, continues to plague the progressive apple men who would extend their plantings or fill the occasional vacancy. The heaviest losses are sustained by those who have set Virginia Crab or other hardy intermediate stock varieties and are developing their trees by budding or grafting their branches. Too frequently the deer destroy the desirable branches before or after the top-working. A bill prepared by the deer committee of the Pomological Society and ably sponsored by State Representative H. P. Sweetser has the objective of extending the deer hunting season in closely specified areas upon proof of damage or serious threat to commercial orchards by deer.

Oscar L. Wyman of the Extension Service, with the assistance of Professor Howard A. Rollins of Connecticut and Dr. Merle T. Hilborn of the Maine Station, conducted a series of six meetings in apple towns March 5 to 10. Among the topics dealt with were orchard labor-saving devices, hardy intermediate stocks, and meeting the problem of magnesium deficiency by use of Epsom salts in the spray mixture and high-magnesium limestone applied to the orchard soil. Maine has gone all-out on this magnesium proposition; the 1945 apple spray and dust schedules list Epsom salts 20 pounds to the hundred gallons at the petal-fall, first and second cover sprays, and all limestone supplied farmers through Tripple A will be high in magnesium. The writer of these notes had the pleasure of addressing the Rhode Island Fruit Growers' Association at Greenville, R. I., on March 5.

Wilson M. Morse of Waterford, member of the University of Maine Agricultural Council to represent the orchard industry of the State, and W. J. Ricker of Turner, former member, were invited by Dean Deering to visit the College of Agriculture on April 12 and meet with staff members in resident teaching, extension and research in pomology or closely related thereto. Other council members likewise met with staff members working in the several divisions or departments of plant and animal industry. A regular meeting of the Agricultural Council followed on April 13.—J. H. Waring, *Prof. of Hort., Orono.*

CALIFORNIA—This walnut tree shaker, produced by the Rye Tractor & Equipment Company has helped solve the problem of getting the harvest off the trees. Many farmers in Santa Clara County, where the device made its appearance, are using them not only for walnuts, but for almonds and prunes as well. (Right) Joe Voss, San Jose grower, attaches the cable around the limb he intends to shake. The cable is padded to protect the tree. (Below) Mr. Voss is assisted by his young son. The walnut shaker is made up of a crank shaft set three-quarters of an inch off center, to which a cable is attached. When the cable is attached to the tree, the caterpillar tractor pulls away until the cable is taut. Then setting the brake to hold the tractor, the power is turned into the crank shaft and away they go—the walnuts all over the ground. With two men and the shaker, a 40-acre orchard is cleared in two days. Shaking the trees by hand, would take twelve men two weeks.—Rose Gidley, *Palo Alto.*

COLORADO—At a meeting of the Peach Board of Control held recently in Palisade, a decision was reached to purchase the property used as the headquarters for the board and to extend the building to include a parasite laboratory.

The state department of entomology w

(Continued on page 37)

APS

A PAGE CONDUCTED IN THE INTERESTS OF THE AMERICAN POMOLOGICAL SOCIETY

THE NATIONAL PEACH COUNCIL

THE National Peach Council, organized to do a job similar to that being done by the National Apple Institute, appears to be making substantial progress.

Peaches are commanding more and more attention on the part of growers, dealers and research men to insure that this delicious fruit reaches the consumer in the best possible condition and with the kind of quality that pleases the consuming public. Better peaches on the market are the result of a better understanding on the part of growers as to those cultural practices that produce good fruit,—good from the standpoint of the consumer.

Dealers likewise are finding new ways to increase sales and lately have learned that those immature, hard and green peaches of yesterday are not good for business because they move slowly and few people like that kind of a peach.

The following items were selected from a report prepared by Mr. Porter Taylor of the Cooperative Fruit and Vegetable Association, Washington, D.C.:

"Improvements in production, harvesting, distribution and retailing of peaches were the main subjects discussed at the meeting of the National Peach Council held at St. Louis February 21 and 22. Reports by growers were favorable as to the 1945 outlook for most producing states indicating that a good crop was in prospect if it was not damaged by adverse weather after this date. Most of the states which had suffered serious drought last season have made substantial recovery although the bud set was not as strong as a year ago.

Plantings of new acreages were reported to be smaller than in recent years because of the shortage of trees.

"Stanley Johnston of the Experiment Station at South Haven, Michigan, discussed plant breeding work which had been carried on to develop earlier and hardier new peach varieties. He emphasized that the Elberta variety had held its leadership so many years because it had many more favorable qualities than the few unfavorable ones. However, in Michigan it had been found practically impossible to market the large quantity of Elberta peaches which were being grown during the limited harvest season and so, earlier yellow varieties had been sought to lengthen the season, as well as to secure varieties with hardier buds than the Elberta which would not be so severely damaged by severe winter temperatures. Similar breeding work had been carried on in New Jersey, Illinois and Georgia, and as a result several new varieties appear to have real commercial merit. Dixigold, Dixigem, and Red Haven ripen from 4 to 5 weeks ahead of Elbertas. Golden Jubilee is good for local market and processing 3 weeks ahead of Elbertas although it is not a good shipping peach. July Elberta, Hale Haven, and Fair Beauty are ready for harvest 2 to 3 weeks in advance of Elbertas. In Georgia, Sullivan's Early Elberta, which was not a product of this breeding program, is doing well 10 days ahead of Elbertas. All of these varieties are freestone, but one new clingstone peach, Ambergem, appears to be promising for commercial canning in the eastern states. "C. B. Denman, of the National Association of Food Chains, commented on the great progress which had been made by the peach group since 1941 when growers and retailers first began to work together. One problem which the industry must meet to increase the efficiency of retailing is to reduce the present 75 percent of the weekly purchase of foods which are purchased by consumers on Friday and Saturday of each week. This fact is especially important in the case of peaches because housewives will not can peaches over the weekend which present a serious barrier to the absorption of a heavy supply of peaches at the height of the season.

"In discussing 'The Present Peach Picture,' Porter Taylor of the Cooperative Fruit and Vegetable Association made the following comments:

"The 1944 peach crop is likely to go down in history as the most valuable crop of that fruit. It had

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MOTHER NATURE'S BLITZKRIEG

(Continued from page 14)

hail incidence is wide, there are extensive areas of frequent occurrence.

Hail is rare in the Far West, but when there is such a storm, it usually occurs in the winter months.

The fruit grower who is fortified against these losses with hail insurance is indeed fortunate. He will receive financial aid to carry on with his program and may realize maximum salvage. No replacement is possible after hail has damaged a crop, but the grower can assist nature in a partial recovery and save or salvage part of the loss in many instances.

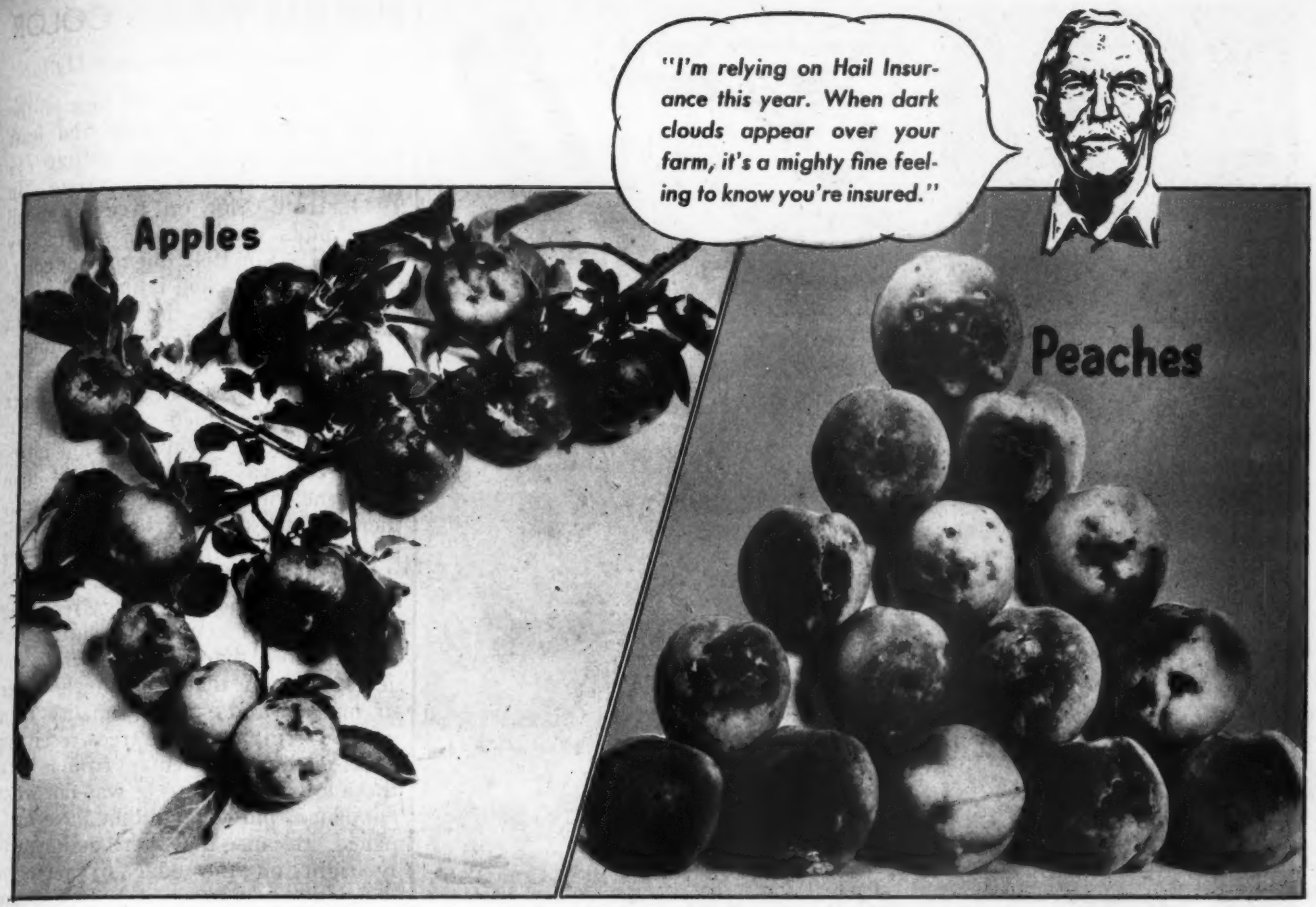
The quality of the crop may be improved in different ways when hail occurs before maturity. Immediately following a hail storm, sprays and dusts must be applied to fruit crops, in order to prevent additional loss from insects and diseases. The usual problem in apples is the codling moth, and in peaches and stone fruits, it is brown rot. The broken skin of the fruit caused by hail affords a port of entry for more trouble in the form of insects or diseases, unless a complete spray program is carried out. A utility grade or a second grade can be salvaged, but the wormy or rotten specimen goes into the cull pile.

Without reducing ultimate volume or quantity, the average quality of a hail crop can be increased by a reasonable amount of thinning to remove a good many culls. With early losses, the grower can improve the quality of most of his crop by careful management and extra work.

When the crop is nearing maturity, the most serious hail losses occur. Time is always a big factor in recovery, and when the crop is approaching maturity, there is little that either man or nature can do to improve the quality of hail-beaten fruits.

The fruit grower who is indifferent and who gives his fruit business little care, will not have much of a crop to protect from hail damage. Such a grower does nothing to protect or assure himself of a crop free from blemishes caused by diseases and insects. It's in the cull class that the bulk of his crop falls.

To the orchardist who is in the business of fruit production as a livelihood and with the joy of producing better and better fruit, hail insurance will prove valuable. After hail, an insured grower will realize a greater return from his crop than he otherwise could have expected, and he will increase the prospect of a crop for the following year.



It's Always the Other Fellow

Growers whose crops have not suffered damage from hail for several years, frequently become content in the belief that their farm is immune from hail.

"Some of the other growers get hail," they say, "but it always skips my farm."

Unfortunately, hail does not *always* skip any farm. Records show that no farm is immune. Sooner or later, the grower who thinks he is safe from hail, finds himself the helpless victim of its destruction.

Play safe this year! Buy Hail Insurance. For complete details and the name of your nearest Hail Insurance Agent, Write to Hail Department, 209 W. Jackson Blvd., Chicago 6, Illinois.

Protect Your Cost of Production

Production cost will again be high and 1945 should be another big income year for fruit growers.

With production costs so high, it's just good business practice to protect your investment with a sound, sensible Hail Insurance Policy.

You can buy a Policy that will adequately protect your production costs. Then if your crop is totally destroyed, you will recover an amount equal to your Policy. If your crop is partially damaged, you will collect insurance in proportion to the damage.

Thousands of growers are turning to Hail Insurance for protection. Last year, these insurance companies paid farmers $5,399,958.53 for hail damage. And remember, no grower ever expects hail! Your Hail Insurance premium may be deducted in computing your income tax return.

THE RAIN and HAIL INSURANCE BUREAU — CERTIFIED HAIL INSURANCE — WEATHER TESTED

ÆTNA INSURANCE GROUP

•

NORTH AMERICA COMPANIES

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THE SPRINGFIELD GROUP OF FIRE INSURANCE COMPANIES

MORE THAN A QUARTER OF A CENTURY OF HAIL INSURANCE

BUSHELS VERSUS COLOR

(Continued from page 11)

color at harvest time was best on the trees getting 2½ pounds and least satisfactory on the trees getting 7½ pounds of ammonium sulfate. In 1944, fruit color on trees from all three plots was far less satisfactory than in 1943 or 1942 due to poor coloring weather. Picked fruit yield of the low nitrogen trees did not go off in the first year of differential treatment, but was about 2 bushels per tree low in the second year and 3 bushels per tree low in the third year. However, the fact that the yield of the low nitrogen trees was higher in 1944 than were the yields of any of the treatments in the two previous years indicates than those trees had by no means "shot their wad." In fact, over the three year period the trees receiving 2½ pounds of ammonium sulfate averaged more than 500 bushels to the acre, of fruit that was much better in market and storage quality than was the fruit from the trees receiving more nitrogen. The main trouble with these low nitrogen trees was not what happened, but what might have happened. Because they were undoubtedly right on the edge of nitrogen deficiency severe enough to cut the yields in half, or worse.

Most McIntosh growers have preferred not to play on the edge of such a precipice and have applied enough nitrogeneous fertilizers to insure high production and also to cut fruit color rather seriously in years that are poor for coloring. But if there were good ways of telling the nitrogen status of McIntosh trees, growers could improve average fruit color and quality without sacrificing production materially. One new measure of nitrogen level that has not been tried out extensively is leaf color. The color of leaves from a normal McIntosh tree varies with leaf nitrogen content and with the nitrogen level of the whole tree; the higher the nitrogen, the darker green the leaves. This relationship has been carefully worked out by members of the Cornell Pomology Department at Ithaca, N.Y., and on the basis of this work, a set of leaf color standards has been scientifically made with the cooperation of research workers in the Inter-chemical Corporation of New York City. These color standards will be published but will have to be tried out widely under orchard conditions for a couple of years before their usefulness is known. If they turn out as hoped, they will give the McIntosh grower a simple accurate way of checking on his nitrogen fertilization program.

Along with better ways of judging the nitrogen levels of his trees, the McIntosh grower interested in high quality fruit needs nitrogenous fertilizer materials and ways of applying them that give quick effects of short duration. Any soil management or fertilizer practices that decrease the available nitrogen in the soil at the end of the summer should help to make the best kind of McIntosh apples at harvest time. Thus there is reason for growers to encourage heavy non-leguminous sod growth in their orchards. Lime, potash and phosphate may be needed to encourage the kind of grass growth that is most effective in soaking up nitrates that are present in the soil after mid-summer. If they are needed in order to make grass grow, their cost may be justified on the basis of better fruit quality as well as because sod culture increases soil fertility and holds the top soil in place. Soil management practices, like cultivation or heavy mulching, probably have no place in mature McIntosh orchards on deep soils because they encourage accumulation of soil nitrates in the latter part of the summer, and thus work against development of good fruit quality. And, finally, soil application of nitrogenous fertilizers in McIntosh orchards should probably be made only in the pre-bloom period or in the late fall, so that there is plenty of time for the nitrates to disappear from the soil before the end of summer.

HOW MUCH COLD CAN FRUIT TAKE?

(Continued from page 8)

years 1938 and 1940 were two such years, though not quite so extreme as this one. At Cleveland, Ohio, in 1938, the temperature remained constantly below freezing for 36 hours from April 5 to 7. In 1940 in the same area, the temperature remained below freezing for 61 consecutive hours from April 11 to 14. Fruit buds were fairly well advanced, but not as far as this year on the same dates. A fair to good set of fruit, with the exception of peaches, followed in these two rather extraordinary years. The interesting thing is that out of six years of early flowering of fruit followed by late frosts in Ohio, 3 years brought forth good crops, and during only one year out of the six was there a complete crop failure. Therefore, growers can expect a fair apple crop with some reasonable certainty, but the peach and other stone fruit crops may prove quite a gamble. A late freeze could do much to greatly reduce peach and cherry production in all northern regions.

HOSE AND BRUSH THINNING OF PEACHES

(Continued from page 12)

effectiveness is shown in the records.

Thinning may begin when the petals reach the early balloon stage, and may continue for a day or two beyond full bloom.

Less damage is likely to occur to the leaf buds from this broom over the brush broom which is used in a downward sweep. The whisk broom is moved with an upward stroke, or is brushed along the branch from the base outward. Every twig must be brushed. The brush is so easily handled that bud distribution can be accomplished with a fair degree of accuracy.

The time element is a factor limiting the use of the whisk broom. In our section the temperature rose to eighty degrees last March 15 and 16. The high temperature these two days caused considerable swelling of the bud, but not sufficient to permit brushing. No appreciable swelling occurred after that until March 25. On this date the temperature again rose to 80, and the first blooms began to open. For three consecutive days the temperature reached eighty and the trees were in full bloom on March 28. I had planned to brush thin with the broom in the full balloon stage. There was but one day between the balloon stage and full bloom. The leaves were then so far advanced it seemed hazardous to undertake brushing. My neighbor, however, brushed quite a few trees with the whisk broom. The work was done by a crew of teen age negro boys on a piece work basis. Four cents per tree was the rate set for five year old trees, six cents for eight year olds and eight cents for fourteen year olds, or the largest trees. The boys averaged ninety trees per day in the five year group, fifty-five eight year old trees and forty-five of the oldest trees per day. The thinners were able to make a fair wage on this basis and the grower accomplished a considerable part of his thinning at a very low cost.

It was necessary to go back over all of the brushed trees and break up clusters. This was done with the rubber hose at an average cost of four cents per tree for all ages. The hose thinning was done by the war prisoners on an hourly basis. The total cost of thinning them amounted to eight, ten and twelve cents per tree respectively.

The effectiveness of this method was found in the packed fruit, which in the final analysis, measures the worth of all orchard operations.

Seventy-one percent of the fruit

sized out two inches and up, and twenty-nine percent packed 1¾ minimum. In the final packing, ninety percent made two inches and up, and ten percent packed 1¾ min. The difference in size of the peaches in the first and last picking is due to harvesting the fruit in a green and immature condition in the first picking. This is an enviable record for size in a year when growing conditions were none too favorable.

It appeared at the time of brushing that far too many blossoms were being removed. The temperature dropped to twenty-three degrees on April 6, killing from ten to sixty percent of the buds at various elevations. Live buds on the heavily brushed trees were scarce, yet at maturity there was scarcely room for an additional peach. Late freezes in this section of the country is a hazard to brush thinning of blooms, however, it is a chance worth taking.

There is little difference in thinning with the whisk broom over the hose from the standpoint of cost. There is, however, a definite improvement in size with the whisk broom method. This difference is due altogether to the time of thinning. The earlier the excess fruits can be removed the larger will be the remaining fruits.

The whisk broom has definite advantages over the brush broom in that more even spacing of the fruits can be accomplished with this small broom. In large operation, however, its use is limited during times of labor shortages due to its comparative slowness.

In orchards of extensive acreage it seems that the brush broom and hose method of thinning would be an ideal combination. It is unquestionably the speediest method of thinning, and there is no reason why proper spacing cannot be realized with constant supervision in the orchard.

RED MITE CONTROL

(Continued from page 13)

effected a 99.7% reduction in the mite population.

The Dinitro-ortho-cyclo-hexyl-phenol spray or dust should be applied thoroughly, with particular attention to the under side of the leaves, and both sides of the tree should be treated within a short time. The materials are also effective against white apple leaf hopper when applied in late summer when the second brood nymphs are present but before any winged forms appear.

EARLY BLOOM REPORTS

(Continued from page 10)

was no, what we call here, severe cold, but the mean temperature was fairly low. The first week of March, the weather abruptly turned unseasonably warm and stayed that way. (March 30, 1945).

Apples will be in full bloom by Easter Sunday which is eleven days ahead of normal. These eleven days are of extreme importance in the matter of escaping spring freezes.—Thomas Rothrock, Secretary, Arkansas State Horticultural Society.

Missouri

We have, during the past three or four weeks, experienced abnormally warm weather, and at the present time (March 31, 1945) for the entire State of Missouri we believe that fruit buds generally for apples, pears, peaches, cherries, plums and other fruits are advanced not more than seven to ten days. With a few more days of comparatively cool weather as experienced recently, the abnormal advancement in growth may be checked, and we may not be more than four to seven days ahead by the time the apples are in bloom for the central and northern part of Missouri.

With the development made thus far, we feel that the only crops that may be in danger of injury by cold are peaches, plums, and early pears. Moreover, the prospects generally for full crops of fruits of all kinds for the State are excellent.—T. J. Talbert, Chairman of Department of Horticulture, University of Missouri.

SEVERE FROSTS WIDESPREAD

The cold weather that overspread central and eastern sections from the 4th to the 7th of April brought severe frosts in widespread localities from Kansas and Oklahoma eastward over the Ohio Valley and in many Appalachian Mountain sections, according to a U.S. Weather Bureau bulletin.

The following states have reported slight to moderate frost damage: New York, New Jersey, Pennsylvania, North Carolina, South Carolina, Tennessee, Kentucky, West Virginia, Indiana, Illinois, Wisconsin, Iowa and Colorado.

Heavily damaged fruit has been reported in Maryland and Delaware, Virginia, Oklahoma, Arkansas, Ohio, Missouri, Kansas, Nebraska, New Mexico, and Utah. Even the West Coast states of Washington, Oregon, and California have reported from minor to considerable frost damage to apricots and early peaches.

APS

(Continued from page 22)

a farm value of $171,677,000, 56 percent above the most valuable crop previously grown in 1943, and more than double the return from the usual crop. This high value was due to the fortunate but unusual combination of a large crop and high prices during the same season. The production of 75,008,000 bushels has been exceeded only once before, in 1931, when the average price per bushel was sixty cents. On the other hand, the farm price in 1944 of $2.33 has only been exceeded once before in 1943 when the total production was the smallest since 1921.

War Prices

"But before we assume that such a level of prosperity is likely to continue in the future, in only five of the past 36 years has the season average farm price for peaches exceeded $1.60 per bushel. These years were 1918, 1919, 1920, 1943 and 1944, each of which were war years when consumer income was at high levels. In fact, we must go back to 1929, a year of peace time prosperity, to find a single year prior to the war when the price per bushel exceeded a national average of $1.04 per bushel.

"The largest crop, that of 1931, sold for an average price of but 60c while the next largest, 1941, brought an average of 91c, although it was slightly smaller in volume than the 1944 crop. From these figures it should be clear that the season average prices depend primarily upon the volume of production and the level of consumer buying power which prevails at the time of marketing the crop.

Average Crops

"By five year periods the average crops have been as follows: 1930-34, 54,618,000 bu.; 1935-39, 56,478,000 bu.; and 1940-44, 63,197,000 bu. If the abnormally small crop of 1943 were removed from the final period, the average production during the remaining four years would have exceeded 68,500,000 bu. In fact, the sum of the largest recent production in California, that of 1944, and the largest recent production outside California, that of 1941, would mean a national crop of 84,500,000 bu."

H. L. Lantz
Secretary

GRAPES

Ripening Season Extended

By CHARLES F. WARD

Mr. Ward, of San Antonio, Texas, has written this article in hopes that it will answer the many questions he has received from readers of the AMERICAN FRUIT GROWER who read his letter in the January issue, in which he stated, "By special cultural methods I have induced grapes to ripen here 90 to 145 days later than revealed in their regular or normal seasons of ripening."—Editors.

IN the innate characteristics of grapes, nature has provided that their habits of growth can be controlled to very definitely alter the season of ripening.

By special cultural methods, grapes can be coached in the development of their growth to blossom and form fruit which can thereby be induced to ripen 90 to 145 days later than nature has heretofore revealed in their normal or regular season of ripening.

In August 1943, I placed bud-grafts of the Golden Muscat variety on some hardy stocks which were in their first season's growth. Those bud-grafts were forced into growth about March 15, 1944.

When those bud-grafts had grown to about six feet each, they were topped to about five feet. This topping quickly induced the development of strong lateral branches which were in turn shortened to two to four buds each about July 1st.

The new growth from the buds of those shortened lateral branches promptly formed fruit, 12 to 15 clusters to each plant, which ripened to fine quality from October 1st to November 26th, inclusive, in 1944. Thus, those bud-grafts in their first season's growth provided ripe grapes direct from the vines during a period of 57 days in their entirely changed season of ripening.

To prepare those vines to produce the Fall crop in 1945, they were cut back to about one foot above the ground in the dormant season, or in January of this year (1945). That procedure will be supplemented by repeating the methods employed in the growing season of 1944, as described above.

The Golden Muscat, in its normal habits of growth, ripen its fruit in the San Antonio area about July 1st, or 90 to 145 days before the crop induced by this special process to ripen on other vines of the same variety in October and November.

By forcing the vines (which ripen their fruit in the normal season) to also produce a second crop, in conjunction with the process on other vines, required to produce the Fall crop, probably any one of several different varieties can be selected and induced to provide ripe fruit direct from the vines over a period of 100 days or more in the Southern areas. The procedure described above would be adaptable to early varieties as far north as Denison, Little Rock, Memphis and Atlanta.

By practicing the methods required to produce the Fall crop, in conjunction with the methods employed to produce the crops which ripened in their regular or normal season, ripe grapes have been obtained direct from the vines in the San Antonio area during a period of exactly six months—May 26th to November 26th, inclusive.

The late Dr. T. V. Munson, in his world renowned research work pertaining to grapes, was probably motivated by and found incentive in the fact that the total number of the cultivated varieties known and available at the time he began that research work would, from the earliest to the latest in their respective seasons of ripening, provide ripe grapes direct from their vines during a period of only about twelve weeks.

Many varieties of grapes do not grow well on their own roots in some types of soil, but grow vigorously and yield abundantly, propagated on adaptable root stocks.

The standard chip bud is adaptable for bud-grafting grape vines above the ground in either summer or in the winter or dormant season. Cut and place this bud in same manner as employed on fruit trees, cover the bud patch with paraffined cloth wrapper which has been slit in center so that eye or bud of the grape can project through it. Tie this wrapper on firmly, then cover this wrapper with additional patch of the paraffined cloth and tie down firmly. When new growth starts remove the outer patch or wrapper but do not release the inner wrapper. Allow the bud to grow through the slit in the inner wrapper and it will tear its own way as it grows. If the buds are put on in early winter, especially in the more Northern areas, an additional protection can be obtained by coating the outer wrapper with melted paraffin at the time the buds are put on. This process is also applicable to the winter or dormant budding of pecans and many other varieties of trees.

U. S. HORTICULTURAL COUNCIL ORGANIZED

By JOHN CHANDLER
Executive Secretary,
National Apple Institute

DULY elected representatives of the fruit and vegetable industries of the nation met in Sacramento, California on March 29th and 30th to bring into being an organization which can voice the opinions and needs of the horticultural interests relative to the re-establishment of international trade as hostilities cease.

Chairman, Marvin H. Walker of Lakeland, Florida, presented a letter from Atty. Carl D. Loos of Washington, D. C., pointing out that it would be necessary to secure an act of Congress, authorizing the U. S. Horticultural Council to engage in certain defined activities so that the Council might fully carry out the purposes for which it is being created, unhampered by the restrictions of the anti-trust laws. Since this would take time, and since the time for aggressive action was imminent, Mr. Loos suggested that the U. S. Horticultural Council proceed under an informal Memorandum of Organization in accordance with the provisions of the Export Trade Act. He explained that such a setup would limit Council activities to matters of export trade in horticultural products only, but it would provide our industries with an operating body until authorizing legislation could be secured.

Since it was apparent to all that the Council acting solely in accordance with the Export Trade Act would be too restricted to launch the full scale program which would be expected of it by the fruit and vegetable interests of the country, it was decided to extend the preliminary period for three months during which time the activities of the Council would be devoted to securing certain immunities from the Attorney General with the help of the Secretaries of Agriculture and Commerce, and to preparing and having introduced in Congress enabling legislation, and to gathering and disseminating information on matters pertaining to post war exports for horticultural products.

It was expected that at the end of this extended preliminary period, it would be clear whether or not, under the laws of the United States, it is possible to set up a cooperative agricultural group which can assist and advise the several governmental departments on matters pertinent to the crops grown, processed and distributed by its members in international trade.

THOUGHTS ON JAP BEETLE CONTROL

By C. OWEN BRANTLEY

DURING the early part of 1944 the press of the nation heralded a new product designed to control the Japanese beetle grub. Thousands who had sought vainly for a worthwhile control were eager to test the product. The supply was limited and many were disappointed at being unable to obtain it. This year the manufacturers and distributors announce that production has been stepped up and that the amazing beetle control will be readily available.

The product is generally known as milky disease spore dust, but is sold under trade names. It is a powder which contains the spores of milky disease, which is fatal to the beetle grub. After several years of experimentation, the United States Department of Agriculture last year granted a license to a manufacturer to produce the spore dust. Tests had proved it to be the most effective of controls, attacking as it does, the beetle grub in the soil.

The adult beetle is extremely difficult to handle. He will take nothing into his system that will kill him. The various controls offered are nothing more than repellents. He remains away from vegetation that has been rendered unpalatable and returns as soon as rains have cleansed the sprayed areas. He goes blithely on his way, laying eggs in the soil so that his armies will be far greater the succeeding year. Killing the grub while it is feeding on grass roots in the late spring and early fall is the only successful method of destroying the pest.

It is not claimed for milky disease spore dust that it will destroy the adult beetle. The purpose of the product is to inoculate the soil against the grub by introducing into the treated area a disease that kills quickly and multiplies rapidly. Its application is simple and the inoculation remains effective for many years. Under normal conditions subsequent treatments are not necessary.

Milky disease spore dust is actually and literally a package of death-dealing germs (spores) that seek out and attack the beetle grubs, affecting them with the disease. They die quickly. As the spores feed upon the grubs thus infected they multiply at the rate of from three to nine billion new spores for each grub, and these spores in turn attack other grubs and multiply in like manner, so that in a comparatively short time the entire treated area is permeated by the disease spores.

Application is simple. The dust is "spotted" over the infested area, using one level teaspoonful of the dust to each spot at five foot intervals each way, on the surface of the soil. No raking or plowing under is required. A rotary type corn planter is ideal for this spotting on large areas.

One pound of the product will treat 4,000 square feet if used in the manner described.

Milky disease spore dust should be applied to the infested area during the months of September and October or from early March through May. The reason for this is that the grubs are nearest the surface at this time, feeding on the tender grass roots. The adult lays eggs in the soil during July and August and the grubs, as soon as hatched, begin their feeding near the surface. Early in November the grubs move down to a depth of six or eight inches and "winter over" until late in February, then move upward again, finally emerging as adult beetles in June. Milky disease spore dust attacks more quickly when the grubs are near the surface and applications should be made at these times.

It is pointed out, however, that the spores will not die and are not entirely wasted if placed in the soil at other periods, but will not multiply to any extent unless there are grubs immediately available to feed upon. The spores (Bacillus popilliae) have been known to remain alive and active after four years in storage". They are to all intents and purposes indestructible. Milky disease is not harmful to animals, humans or plants and may be used without taking any precautions if directions are followed.

Several informative bulletins have been issued on the subject of Japanese beetle control by the milky disease spore dust method by the Department of Agriculture. Experiment Station tests have shown that if milky disease is introduced to any extent in infested areas, the disease will spread so rapidly that within a few years a considerable area will become inoculated.

IN THE NEWS

H. B. TUKEY

Effective October 1st of this year, Dr. H. B. Tukey, Chief in Research at the New York State Agricultural Experiment Station and Professor of Pomology at Cornell University, will leave Geneva, New York to head the work of the Horticultural Department at Michigan State College, the oldest agricultural college in America.

H. B. TUKEY

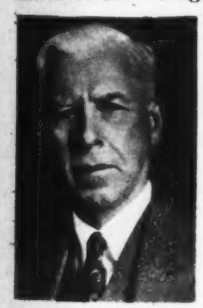
Dr. Tukey came to Geneva in 1920, and will complete 25 years of service in New York State on October 1st.

He has had a wide experience in the horticultural field. Dr. Tukey has worked in plant disease and insect problems in Southern Illinois, and packing and handling of fruit in Western Colorado. He worked for 3 years with fruit breeding and variety tests at the Geneva Station and in the preparation of the monographs on fruit varieties under the leadership of Dr. U. P. Hedrick, at one time Head of the Department of Horticulture at Michigan State College. He has published material dealing with fruit breeding, pollination, fertilizers, pruning, cover crops, grapes, cherries, apples, pears, plant propagation, rootstocks, dwarf trees, roses, storage problems, and the general line of nursery problems.

Actively identified with scientific horticultural work in the country, Dr. Tukey developed the embryo culture technique which is now widely used in plant breeding, he has led in the development of rootstocks and dwarf fruit trees in this country, and he has recently been identified in the new developments in plant growth substances such as weed killers.

FRANK L. BURRELL

Frank L. Burrell, who guided development of the process for sterilization of canning milk, will retire as manager of the Anderson-Barngrover division of Food Machinery Corporation October 1. He will be succeeded by William de Back who also has fathered many inventions for the better handling of foodstuffs.



FRANK L. BURRELL

In announcing the retirement, President Paul L. Davies lauded the efforts of Mr. Burrell during his 50 years of service with the organization. He said Mr. Burrell would remain a member of the board of directors and of the executive committee.

"Mr Burrell has played a very important part in the development of the canning industry, particularly on the Pacific Coast," Mr. Davies said. "He has aggressively insisted upon a broad development program which has resulted in the production of a great many labor saving devices now in use throughout the canning industries of the world.

"Probably one of the outstanding achievements developed under Mr. Burrell's guidance has been the continuous sterilization of canned milk."

NEW

- WALK-IN COOLER
- POWER LUBRICATOR
- BOOKS AND BOOKLETS

WALK-IN COOLER •

Before the war the refrigeration line of the International Harvester Company included milk coolers and walk-in coolers, the latter being large-capacity units which serve both as milk coolers and as refrigerators for other farm produce. These units are being completely redesigned and restyled, and will be electric-powered, as will all other International refrigeration equipment.

The Company will offer in addition two new types of refrigeration, a line of Zero Chests for the freezing and storage of perishable foods, and a line of combination units, offering both zero-temperature and ordinary-temperature refrigeration in the same chest. These will be produced in a variety of sizes and models. Since the new line is in the pre-production stage, no data as to prices are now available.

BULLETINS •

"Tree-Conditioning the Peach Crop"—a study of the effect of thinning and other practices on the size and quality of the fruit—is the title of Bulletin 507 issued by the University of Illinois Agricultural Experiment Station at Urbana, Illinois. M. J. Dorsey and R. L. McMunn are the authors of the bulletin.

The Agricultural Extension Service of the State College of Washington at Pullman, Washington has published three new bulletins of interest to the fruit grower:

"Home Built Farm Refrigerators," Extension Bulletin 317, by R. N. Miller, and Homer J. Dana.

"Apple Picking Suggestions," Extension Cir. 67, by John C. Snyder.

"Suggestions to Peach Pickers," Extension Cir. 66, by John C. Snyder.

BOOKS •

In "Southern Horticulture," the author, H. P. Stuckey, Director of the Georgia Experiment Station, deals with all phases of the cultivation of fruit and vegetable crops, as well as ornamental plants, which can be successfully cultivated in the southern region.

"Spray Chemicals and Application Equipment," by J. A. McClintock and Wayne B. Fisher is a text book and hand book of the insecticide-fungicide industry and of application equipment. Among the many subjects aptly discussed and illustrated in the book are: the stomach poisons, contact insecticides, fungicides and weed killers.

POWER-LUBRICATOR •

A new air-powered lubricator, especially designed for farm use, is announced by The Aro Equipment Corporation. In line with the trend to a greater use of compressed air on farms — to save muscle, time and war-scarce manpower — this new lubricator should help farmers everywhere prolong the life of tractors and other farm implements, and save much lubricating time, compared with hand gun methods.

The new Aro Model No. 2160 is a compact unit of heavy gauge steel, housed in an attractive, sturdy, dust-proof container. It has 60 lb. bulk capacity. A 25 lb. or 50 lb. pail of grease can be placed directly inside the unit for operation without transferring the grease.

Simple in operation, the unit permits "one-hand, one-man control." Just clamp the fitting, squeeze the trigger of the gun, and by means of improved control the correct amount of grease is forced into each lubricating point. The unit handles light or heavy greases.

BOOKLETS •

A new book containing useful information for every tractor owner has been released by the B. F. Goodrich Company. The book, entitled "Farmer's Handbook" consists of 68 pages of pictures and facts on the care of farm machinery, and other helpful information. For a copy of this book simply write to Department 169, The B. F. Goodrich Co., Akron, Ohio.

Specifications covering some sixty different pieces of farm equipment are given in a new booklet "Today's Most Modern Farm Equipment Powered by America's Most Modern Air-Cooled Engines" issued by the Wisconsin Motor Corporation.

The Studebaker Corporation has published a booklet, "Care and Maintenance of Your Farm Truck." The booklet gives a multitude of simple suggestions for locating and correcting trouble in your farm truck.

A GROWER'S ACCOUNT OF HAIL EXPERIENCE

JOHN H. PECK, owner of the Home Acres Fruit Farm at Webster, New York relates his experience with a hail storm last summer. . . .

" 'Were you hit hard?' 'Were you insured?' seemed of paramount interest to the rapidly growing group of farmers gathering in Webster that July afternoon to compare experiences and verify rumors of the hail storm that had just ended as abruptly as it had started, leaving behind a strip of leveled crops and damaged orchards.

"We were riding homeward from the canning factory when I first noticed silver streaks appearing in the dark clouds to the west, ahead of us. I called these clouds to the attention of the man with me, remarking that I bet it would hail before we reached home. Some of the cherry pickers had already stopped and we hurriedly loaded what cherries had been picked. The storm broke as we were backing into the barn. For twenty minutes the hail fell, being driven by high winds clear across the barn floor. The ground soon became white and the stones began to pile up against the buildings where we could still pick some up the following morning.

"I was lucky. I had taken out hail insurance a few weeks before, although we had never had hail since I bought the farm in 1935. Both my father and my wife, who had not favored my investment, were as pleased as I that we were at least partially covered for the loss that had so suddenly befallen us. It was the first time we were ever insured for hail and I did not insure for the maximum amount allowable per acre. I am sure, however, we will be covered in the future as hail has always been one of my yearly worries.

"As time went on, the effects of the storm became more apparent. The claim was not adjusted until a more accurate estimate of the damage could be made. The damage varied from 83 percent in one block of Macs on the south end of the farm to 59 percent on a block of Elbertas on the north end of the farm. The average loss was 79 percent. The adjustment was very satisfactory and I was more than pleased with the adjustment and the prompt settlement of the claim.

"My farm consists of 155 acres with about 85 acres in fruit. There are about 70 acres of apples and about 20 acres of peaches including filler trees in one block of apples. I also have a few cherries, berries, and pears. There is also about 40 acres of crop land. Many of my neighbors were harder hit than I was and were not insured. I repeat that I was lucky."

OPPORTUNITY ADS

Only 15c a Word—CASH WITH ORDER. Count each initial and whole number as one word.
ADDRESS: AMERICAN FRUIT GROWER, 1370 Ontario Street, Cleveland 13, Ohio

BABY CHICKS

250-350 PEDIGREED SIRED BIG FLOPPY COMB TYPE eggbred "AAA" English White Leghorn Pullets $16.00. Unsexed $8.75. Cockerels $3.50 per hundred. Four Weeks old "AAA" Pullets $26.00. 95% sex guaranteed. Catalog. MARTI LEGHORN FARM, Box A, Windsor, Missouri.

SCHLICHTMAN'S U. S. APPROVED, PULLORUM Tested Chicks. Per 100 prepaid. Leghorns, Rocks, Reds, Orpington, Wyandottes, Minorcas, $9.40. Leftovers $7.45. Pedigree sired and sexed chicks. Free catalog explaining 2-week replacement guarantee. SCHLICHTMAN HATCHERY, Appleton City, Missouri.

FOR SALE

SIX NEW PEACH GRADERS WITH DEFUZZERS and Six new Apple Graders. Write HAMILTON & COMPANY, Ephrata, Lancaster County, Pa.

FOR SALE—1,000 EMPTY, UNUSED, APPLE BARrels. WRITE HERBERT F. HARRISON, Route 1, Box 40, Flora, Illinois.

FOR SALE: LARGE APPLE POMACE DRYER WITH equipment. Cider presses and Supplies. W. G. RUNKLES MACHINERY COMPANY, 185 Oakland Street, Trenton, New Jersey.

FOR SALE—CIDER PRESS SIZE NO. 8 MOUNT Gilead. Good Condition. E. SAMDVICK, 679 Cahoon Road, Westlake, Ohio.

MISCELLANEOUS

ELASTIC ¼" 8 YARDS $1.00; ½" 5 YARDS $1.00. Bias binding, White or black, 50 yards $1.00. SPENCER TRADING COMPANY, Spencer, Mass.

NURSERY STOCK

DEPENDABLE FRUIT AND NUT TREES, SMALL fruits, Ornaments, and General Nursery Stock. Combined catalogue and Planting Guide free. CUMBERLAND VALLEY NURSERIES, INC., McMinnville, Tennessee.

JUNE BUD PEACH. AM NOW ACCEPTING ORDERS for Fall delivery. Should have half million peaches for commercial and wholesale trade. Write for prices. FARMERS WHOLESALE NURSERY, P.O. Box 34, Smithville, Tennessee.

IMPROVED BLUEBERRIES—LARGE AS GRAPES Delicious government hybrids, 2-year plants 60 cents each. $7.00 doz. 3-year bearing age $1.25 each. $14.00 doz. GEO. C. MORSE, Williamson, New York.

NEW MINN. 1166 EVERBEARING STRAWBERRY. Starts bearing 60 days after set, and continues to frost. 3 crops in 18 mo. Sweetest of all everbearers. Withstands hot dry weather. Berries keep a week after picked. Large, bright, red, sweet berries sell for $1.00 per quart. We are headquarters for this variety. Greatly reduced prices. Order direct from this ad. 25 plants for $2.00; 50 for $3.00; 100 for $5.00; 250 for $11.00. Prepaid. SOUTH MICHIGAN NURSERY, (Order Dept.) New Buffalo, Michigan.

EVERGREENS: SEEDLINGS. TRANSPLANTS. SMALL Ornamentals. Write for list. SUNCREST EVERGREEN NURSERIES, Johnstown, Pa.

ORCHARDS FOR SALE

ELBERTA PEACHES, ABOUT 25 ACRES AND 50 acres cleared—$3500.00 cash. Secured investment. ARCO-OZARK COMPANY, Hot Springs, Arkansas.

ORCHARD FOR SALE OR LEASE—160 ACRES; 70 acres apples, 20 acres peaches, pears, plums, grapes, raspberries, strawberries. Balance in pasture, Walnut and Pecan groves, or cultivation. All trees at best producing age. Modern seven-room house, tenant house, gas, electricity. Soft water. Good outbuildings. Complete orchard and farming equipment. MRS. SEBASTIAN HAHN, Route 1, Coffeyville, Kansas.

FOR SALE—500 TREE APPLE ORCHARD, 18 YEARS old. Well located and in good production. Bargain. No help. Write for particulars. H. P. WILLOUGHBY, Spencer, Indiana.

PATENTS

NATIONAL TRADE MARK COMPANY. MUNSEY Building, Washington, D. C.

PLANTS FOR SALE

SWEET POTATO PLANTS, OPENGROWN FROM healthy stock, Nancy Hall, Porto Rico, Early Triumph and Southern Queen. $3.00 per 1000 postpaid. Prompt shipment. No order too large or too small. BAILEY BROS. PLANT FARM, Adairville, Kentucky.

SWEET POTATO PLANTS. BIG, STRONG, WELL rooted Plants. 200, $1.00; 500, $1.50; 1000, $2.75; 2500, $6.75; 5000, $13.00. D. & C. PLANT COMPANY, Gleason, Tennessee.

MILLIONS, PORTO RICAN POTATOES; RUTGERS, Marglobe, Baltimore Tomatoes; Hot and Sweet Peppers; Copenhagen Cabbage. Write for Prices, DANIELS, Ty Ty, Georgia.

SWEET POTATO PLANTS—NANCY HALLS AND PORTO RICANS. Ready May First, Guaranteed count and quality. $2.75 per thousand. MARGRAVE BROTHERS, Gleason, Tennessee.

POSTPAID MILLIONS GOLDEN YELLOW NANCY Halls extra sweet. Improved Pink Skinned Porto Ricos. Orders filled with extra nice plants same day received. 300 $1.00; 500 $1.50; 1000 $2.75. L. T. ROBERTS, Gleason, Tennessee.

GUARANTEED, NANCY HALL, PORTO RICAN POtato plants; 500 $1.35; 1000 $2.50. Cash. Quick shipment. ROMULUS PAGE, Gleason, Tennessee.

NANCY HALL AND PORTO RICAN POTATO PLANTS. Ready to ship. Good strong plants. Guaranteed to reach you in good condition. 500—$1.50; 1000—$2.40. 10,000 and over—$2.30 per thousand. ROBINSON PLANT FARM, Sharon, Tennessee.

RABBITS

RAISE CHIN-CHINS, THE BIG MONEY-MAKING Rabbit. Big Demand. Small Investment. Ideal Business for Anybody Anywhere. WILLOW FARM, R32, Sellersville, Penna.

SONGWRITERS

SONG POEMS WANTED. TO BE SET TO MUSIC. Send poem for immediate consideration. FIVE STAR MUSIC MASTERS, 716 Beacon Building, Boston 8, Mass.

TREE BANDS

EARLY BIRD TREE BANDS CHEMICALLY TREATED. Kills the Codling Moth. Send orders early. EDWIN H. HOUSE, Saugatuck, Michigan.

SUREKILL TREATED TREE BANDS AVAILABLE for 1945. Orders being booked now. Write for prices. M. A. KOELLER, Barry, Illinois.

USED AUTO PARTS

HAVING CAR TROUBLE? USED, GUARANTEED auto, truck parts save money. Transmission specialists. Describe needs; immediate reply. VICTORY, 2439 AZ Gunnison, Chicago 25, Illinois.

WANTED—FARMS

WANTED TO HEAR FROM OWNER OF FARM OR unimproved land for sale. WM. HAWLEY, Baldwin, Wisconsin.

WANTED—FRUIT VARIETIES

WANTED: NEW VARIETIES OF FRUIT AND PLANTS, varieties which will resist frost and disease. VIRGINIA TREE FARM, Woodlawn, Virginia.

WANTED—ORCHARD SUPPLIES

WANTED—SPRAYERS, CLEANERS, PACKING House and Orchard Supplies, Nailing Machines. CORY ORCHARDS, Cory, Indiana.

WELDING

MAGIC ELECTRIC WELDER, 110 VOLT AC-DC; welds, brazes, solders, cuts all metals, easy to use; full directions. Complete with power unit, flame and metallic arc attachments, carbons, fluxes, rods, mask. Guaranteed One Year. Only $19.95. Used by the Navy. Splendid for farm use. MAGIC WELDER MFG. CO., 241 LS Canal St., New York, New York.

WAR SURPLUS PROPERTY

SURPLUS property sales have recently been conducted by the "On-the-Spot" bid method which has simplified and speeded up selling and has fostered a wider and more equitable distribution of surplus property. Although all interested persons are welcome to attend these sales, bidding at them will be restricted to qualified dealers. Since scarce items can often be obtained at a sale, persons are urged to request their dealers to attend sales conducted by Treasury officials in their vicinity.

On April 5, 6 and 7 sales of construction machinery and farm equipment, including tractors and harrows, were held at Syracuse, Albany and Saratoga, New York, respectively.

Richmond, Virginia, was the scene of three sales on April 9, 10 and 11. Here dealers bid on such items as tractors, a mower, harrows and plows.

"Spot Sales" of farm and construction machinery were also held at Sharonville and Marion, Ohio and at McAlester, Oklahoma, during the past month.

As a result of the curtailment of activities at the War Relocation Center at Amache, Colorado; Topaz, Utah, and Heart Mountain, Wyoming, a series of spot sales of farm machinery was held at these places during the month of April.

TREE STUMPS AS WEATHER INDICATORS

By E. L. MOSELEY
Bowling Green State University
Bowling Green, Ohio

FOR long-time weather forecasting a method differing from that used in forecasting daily weather changes is employed. It is based on the fact that there is a tendency for excessive or deficient rainfall to recur in the same region after the lapse of certain intervals. These intervals are the same as those which characterize changes going on in the atmosphere of the sun. In some way, not yet fully understood, variations in our rainfall are probably caused by variations in the solar atmosphere. We know that magnetic and electrical disturbances, radio reception, and displays of northern lights are influenced by the sun. The magnetic sunspot period is about 22.6 years. This and some shorter periods, such as one-half and one-third of 22.6 years, correspond fairly well to periods of our weather, but still better in the case of rainfall, is a period of 90.4 years, which is four times 22.6 years.

To illustrate, in the spring of 1943 copious rain fell over much of the midwestern states. Floods greater than many of the people had previously experienced devastated parts of eight states from Indiana to Oklahoma. The records of rainfall in this region that were kept 90.4 years prior to this flood are not numerous, but they suffice to show that very heavy rains fell then also.

In the growing season of 1936 a widespread drought affected much of the interior of the United States, so that crops were very poor indeed; 90.4 years earlier there had been an unusual shortage of precipitation in the same area. St. Louis had only 8.91 inches of rain during the six months ending with March, 1846, and Leavenworth, Kansas, had only 3.82 inches in the same period.

Weather records in this country, except at Charleston, South Carolina, afford no information about the rainfall twice 90.4 years ago. Nevertheless, much is known about it as a result of the study of tree rings. Trees, like corn, grow better when they have enough moisture. Unlike corn, their increase of girth is due to a new layer of wood formed each year just beneath the bark. When the tree is cut down the layers of wood show as rings and with care, the year when each was formed can be ascertained by counting back from the bark.

If a number of stumps are studied most of them will show that the ring formed in 1936 was narrower than the ring formed in the previous year or in the following year. This correspondence of tree ring width with rainfall applies to every year as far back as records were kept in regions where trees grew. Undoubtedly the same was true prior to the earliest records.

We have sections from two hemlocks in Pennsylvania and two white oaks in Ohio that were growing at the time of Christopher Columbus. They show that two years after his first voyage to America, that is in 1494, there was a drought in those states. Ninety and ninety-one years later there was another severe drought, as shown by these and other trees in this part of the country, also at each interval of 90 or 91 years after that, the last in 1856. That was one of the driest years in the nineteenth century, as shown by numerous trees and also by weather records.

In Illinois and states west of the Mississippi River it was not so dry at that time. In some places in that region there was more than the usual amount of rain. Indiana, Kentucky, Ohio, and Pennsylvania have records of precipitation for 1856, at nineteen stations altogether. At every one of them there was a shortage of rain that year; at most of them the deficit was large. It was also dry at that time in New York and in western New England. Similar weather may be anticipated for all of these states and others near them in the latter half of 1946 and in part or most of 1947.

STATE NEWS

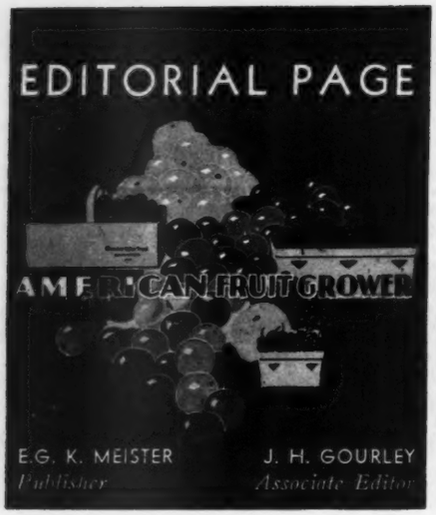
(Continued from page 20)

be requested to participate in a program for the control of the Oriental fruit moth, which now threatens an invasion of the Grand Valley.

An assessment of one-half cent per bushel and one-fifth of a cent per box on peaches grown this year was recently voted by peach growers. This assessment would raise approximately $5,000 on a basis of a million bushel crop. A normal crop over the valley would far exceed a million bushels.

OHIO—The Columbus (Ohio) Horticultural Society, the third oldest body of its kind in America, held its centennial celebration the week of April 10. The event was opened by a banquet at a hotel located on the same site as the tavern in which the first meeting of the society was held.

The various programs throughout the week had such speakers as F. F. Rockwell, president of the Men's Garden Club of America and Dr. A. B. Stout of the N. Y. Botanical Garden.



"Investments in Horticulture"

MUCH OF TODAY'S prosperity is false, says Dr. H. B. Tukey, Chief in Research at the New York State Agricultural Experiment Station, in an article which appeared recently in RURAL NEW-YORKER. A forty thousand dollar income with a seven thousand dollar tax is not security, but there are investments upon which fruit growers can rely, and they are knowledge and organization.

Knowledge in plant sciences has made great strides in horticulture possible. In the matter of improved varieties of fruits, their creation is no longer left to chance. Many new varieties are made to order for particular needs. "The V-peaches from Canada, the Halehaven and Redhaven peaches from Michigan, the Golden Jubilee peach from New Jersey, the Cortland apple, Taylor red raspberry, Sodus purple raspberry, Catskill strawberry, and Stanley plum from New York, are all products of scientific plant breeding. The plant breeder has learned much about good and bad parents. He knows that the Deacon Jones apple transmits size, that the Mills grape transmits high quality, and that the Lloyd George raspberry and the Premier strawberry are superior as parents.

"A few years ago," says Dr. Tukey, "pollination was little understood and its importance was unappreciated. Compatibilities and incompatibilities between varieties are now better known, so that no one would today plant a solid block of Grimes Golden or McIntosh apples, Windsor sweet cherries, Bartlett pears or J. H. Hale peaches without providing for effective cross-pollination; and he would not use Baldwin and R. I. Greening as pollenizers.

"As for insect and disease control, the days solely of lime-sulfur, Bordeaux mixture and arsenate of lead are past. Now come the new organic insecticides and fungicides. PDB for peach borer control was an important step. Elgetol and the di-nitro compounds have proved very effective. Puratized and Isothan Q 15 have suggested promise in control of apple scab. New organic compounds are literally flooding the test laboratories of the country. The biological control of insects by means of parasites as the Oriental fruit moth, is an accomplished fact. Methyl bromide gas has proved an effective rodent control in cold storages. But for every fact now known and every new compound tried, a hundred await solution or demand attention . . .

"Why apply these materials in water? Why cart around 500 gallons of water to apply a few pounds of active ingredient? It is the time-honored way, but why must it continue? DDT has been applied in a gas and in a dust very effectively. Weeds have been killed with 2-4-D. applied in a gas from a one-pound cylinder. Apples have been held to the tree in fall by application from a one-pound cylinder of growth regulators dissolved in a liquefied gas. The future is challenging and promising.

"Knowledge and organization are two sound investments for horticulture, the sort of thing that 'neither moth nor rust corrupt,' stored 'where thieves do not break through nor steal.'"

Electronics in Fruit Breeding

IT IS NOT OUR PURPOSE to forecast the future, but we would like to call attention to an interesting scientific development. It is the successful operation of the "Betatron," the most powerful type of X-Ray machine ever built. The third machine known to exist in the world was recently completed at Ohio State University. This machine, similar to one built at the University of Illinois, is one of the most outstanding achievements of modern electronics.

The Ohio State "Betatron" operates with an energy of 4½ million volts and sends the invisible electrons around at a speed of 184,000 miles per second, almost as fast as light travels. A conventional X-Ray machine operates at only 400,000 volts. The radiation from the new "Betatron" exceeds that of the total supply of radium in the world.

Radiated energy from the "Betatron," similar to that from radium, may have great value in checking cancer and other types of malignant growths. By controlling the electron beam, scientists feel that the machine may have numerous uses in therapy. It also is useful in the study of the structure of metals and products of ceramics.

But the most interesting possibility of the "Betatron" to fruit growers is in the realm of plant biology and physiology. Fruit growers are well acquainted with bud-sport varieties of fruits, particularly in apples. For a number of years scientists have known that if they subject certain plants and animals to powerful X-Rays, a bud-sport, or mutation as they call it, can be produced. This creation corresponds to the bud-sports that occur naturally, only the X-Rays speed up the process greatly and make many more mutations and more frequently. Because of the limits of conventional X-Rays, little practical use of them was ever made in the field of horticulture.

It is unknown at present what ultimate use can be made of the electron-rays of the powerful "Betatron." Scientists, however, feel that it promises to add greatly to our understanding of the development of mutations and subsequently to the creation of new varieties. Thus, it may be useful in the future in the artificial creation of new fruits and other plant varieties. If success is achieved in this field, we shall leave the implications of such development to the imagination of our readers. It may be that scientists are on the threshold of discovering just what causes mutations and new plant varieties and can at will create new varieties of plants.

Less Sugar for Canning

A REDUCTION in sugar for canning is bad news for fruit growers. Last year large quantities of peaches and berries were wasted because sugar for canning could not be obtained. In spite of last year's experience, OPA allots 20 pounds of sugar per person for 1945 home canning, as against 25 pounds allotted last year.

Something must be done about this! Only disaster to this year's fruit crops will prevent a repetition of last year's unfortunate experience, when much precious fruit was dumped because consumers could not obtain sugar for canning.

Fruit growers are urged to get in touch with their fruit associations, write to the OPA, and also to their representatives in Congress to point out the need for greater quantities of sugar so that our present serious food shortage will not be further aggravated.

Stands Super Heat of Jet Plane Engines...

Now part of the secret can be told—how the new jet plane was developed with its meteoric speed and climbing power . . .

The jet plane has no conventional engine... It needs no propellers...

It is literally blown through space by firing compressed gases that blast out through a tube behind the engine.

The simple idea of jet propulsion is old, centuries old. Yet men have spent their lives trying but failing to make it work—repeatedly frustrated by lack of suitable metals.

Every metal tried was rapidly attacked and destroyed by the blast of fiery gases. But there was always the hope that sometime metallurgists would develop high-strength alloys that could endure such destructive heat without melting, warping, or burning away. Today that hope is realized.

To withstand the high temperatures of the jet engine combustion, designers have chosen high-Nickel alloys as the most suitable materials for vital parts.

...just as it stands up to heat in home appliances

The heating element in your electric stove, or toaster, is another example of Nickel's proven ability to resist heat. In this, and dozens of other ways, versatile Nickel is your "unseen friend"—as much a part of your daily life as the hot water tank in your basement or the gears in your car.

The International Nickel Company, Inc.
New York 5, N.Y.

International Nickel—world's largest miners, smelters and refiners of Nickel and Platinum metals . . . producers of INCO Nickel Alloys, including MONEL and INCONEL.

CUT MORE WOOD TO CUT THE PAPER SHORTAGE

"Saves money"—say up-to-date growers!

Not the amount of insecticide, but the results they get per dollar . . . that's what counts with forward-looking growers. These are the men who appreciate the true economy of the Dow Control Program.

Every insecticide in this complete line is planned for effective, *specific* control with the minimum amount of material. Each one is designed for ease of application, with maximum savings in time and labor costs. Throughout the entire season, the Dow Control Program means dependable results, long-run economy.

Ask your dealer or your state experiment station.

Dow Control Program

Pre-Blossom Stage

"Mike" Sulfur—microscopically fine, contains more than 95% active sulfur, wets instantly, covers thoroughly, gives superior finish to fruit, gives extra thorough coverage against apple scab and brown rot. *Dow Dry Lime Sulfur* is less caustic than liquid lime sulphur but more caustic than "Mike" Sulfur, is easy to handle, dissolves readily in cold water, imparts finish to fruit. *Bordow* is an effective copper fungicide particularly recommended for leaf spots on cherries, prunes and plums. *Dow Arsenate of Lead* is a reliable spray controlling most leaf-eating and chewing insects.

Complete Control DOW **for entire season**

THE DOW CHEMICAL COMPANY MIDLAND, MICHIGAN